

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter summarizes the physical, biological, social, and economic environments relevant to National Forest System (NFS) roadless areas within the State of Idaho²⁰ (Idaho Roadless Areas), and the potential changes to those environments relevant to the Proposed Action and its alternatives. The analysis is structured around three alternatives: (1) the 2001 Roadless Rule; (2) Existing Plans; and (3) the proposed Idaho Roadless Rule; and the associated management themes, designations, prohibitions, and permissions. Idaho Roadless Areas are identified in appendix C of this draft EIS.

Idaho Roadless Areas are generally undeveloped areas, typically exceeding 5,000 acres that meet the minimum criteria for consideration for inclusion in the National Wilderness Preservation System. These areas were identified during the Forest Service's Roadless Area Review and Evaluation (RARE II) processes, subsequent assessments, or forest planning.

Nationally, inventoried roadless areas make up about 58.5 million acres of the NFS. Idaho has the second largest number of roadless areas, 9.3 million acres, in the Nation, exceeded only by Alaska. About 15 percent of the Nation's roadless areas are in Idaho.

OVERVIEW OF IDAHO ROADLESS AREAS

Of the approximately 53 million acres of land in Idaho, about 60 percent are Federal public lands; 12.0 million acres are Bureau of Land Management (BLM)-managed lands, and 20.5 million acres are NFS lands (USDA Forest Service 2006) (fig. 3-1). NFS lands in Idaho include 5 million acres of special legislated designations such as wilderness, national wild and scenic rivers, and national recreation areas, and 9.3 million acres of roadless areas (fig. 3-2).

²⁰ Idaho Roadless Areas are those land areas designated by the proposed Idaho Roadless Rule, where the management direction would apply (see appendices C and E). They are based on the most recent inventory available for each national forest in the State of Idaho. Forest plans were used, as well as other assessments and the inventory contained in the 2000 Roadless Rule Final Environmental Impact Statement (USDA Forest Service 2000). Using these inventories the Forest Service has identified approximately 9.3 million acres of inventoried roadless areas subject to the proposed rule.

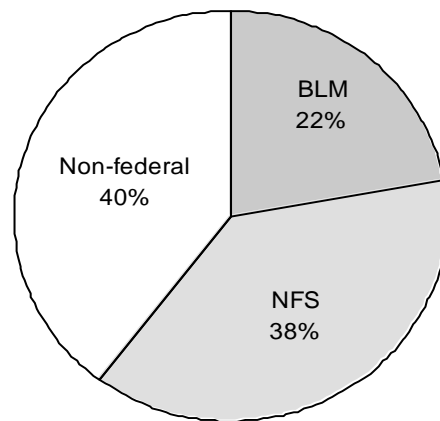


Figure 3-1. Lands in the State of Idaho by ownership

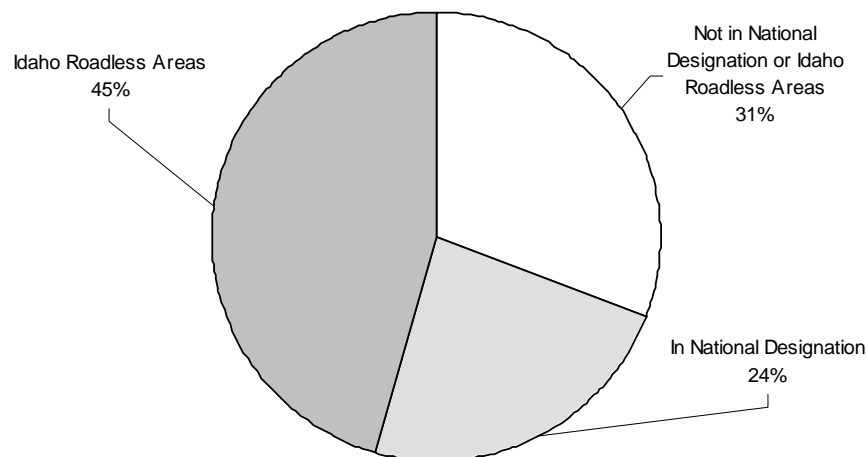


Figure 3-2. NFS lands in Idaho, 20.4 million acres

Idaho's 281 individual roadless areas are spread across 12 national forests. Several roadless areas are shared among one or more forests, resulting in a total of 250 combined roadless areas (table 3-1, appendix C). These roadless areas stretch from the Selkirk Mountains on the Canadian border to the Wasatch Range on its southern border with Utah. Appendix C provides a description of Idaho Roadless Areas, including a description of each roadless area's unique characteristics. Appendix D provides a rating of the characteristics found in each roadless area.

The landscapes of Idaho Roadless Areas are varied, ranging from tree-covered mountains to deep river canyons to rolling grasslands. Idaho Roadless Areas provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at-risk species. These areas support a diversity of aquatic habitats and communities, including habitat for 17 aquatic threatened, endangered, and Forest Service sensitive species (TES). Idaho Roadless Areas also

include a range of terrestrial habitat types such as grass and shrub lands, young forested stands, and old-growth forests. Forests vary from the very dry pinyon-juniper woodlands to cold alpine forest types at high elevations. The forests are composed of approximately 40 percent Douglas-fir, 20 percent spruce-fir, and 8 percent lodgepole pine.

Each roadless area has unique features, recreational opportunities, and commodity opportunities (such as timber, minerals, and livestock grazing), including 15 percent of the Nation's phosphate production. Some roadless areas are small and do not provide the same remote feeling as larger roadless areas. Some areas are expansive, with exceptional opportunities for solitude. The Boulder-White Clouds Roadless Area, for example, is more than 400,000 acres.

Table 3-1. Summary of Idaho Roadless Areas by national forest

National Forest	NFS lands (acres)¹	Idaho Roadless Area (acres)²	Percent roadless	No. of roadless areas
Boise	2,653,100	1,108,900	42	42
Caribou	972,400	741,700	76	34
Challis	2,463,500	1,437,600	58	28
Clearwater	1,680,000	984,400	59	16
Idaho Panhandle	2,500,000	797,000	32	45
Kootenai	46,500	35,100	75	4
Nez Perce	2,224,100	497,000	22	19
Payette	2,327,000	908,200	39	22
Salmon	1,772,500	827,700	47	30
Sawtooth	1,732,100	1,194,900	69	23
Targhee	1,312,400	736,300	56	16
Wallowa-Whitman	35,400	35,400	100	2
Other NFS lands, no roadless areas ³	745,400	0	0	0
	20,464,400	9,304,200	45	281

¹ Based on Land Areas Report (LAR)—as of Sept 30, 2006 (USDA Forest Service 2006).

² Based on most recent inventory; see discussion in chapter 2 and appendix E.

³ Includes national forests and grasslands without roadless areas in Idaho (Bitterroot, Wasatch-Cache National Forests, and Curlew National Grasslands).

ANALYSIS FRAMEWORK

The following sections describe the general analysis methodology, assumptions, and projections regarding permitted and prohibited uses for timber cutting, sale, or removal; road construction/reconstruction; and discretionary mineral activities.

GENERAL ANALYSIS METHODOLOGY

Nature of Effects

The proposal is programmatic in nature, consisting of direction for timber cutting, road construction/reconstruction, and discretionary mineral activities, which would be applied to future management activities. It does not prescribe site-specific activities on the ground and it does not irreversibly commit resources. As stated by Idaho Governor James Risch, this proposed rule “does not cut one tree or plow one road.” The proposed Idaho Roadless Rule itself would have no direct environmental effects, and any subsequent activity would need to be individually analyzed before any authorization is made.

The EIS identifies the land areas and acres where activities could occur within Idaho Roadless Areas; however, not every acre would be potentially affected. The EIS relies on trend analysis of past, present, and reasonably foreseeable activities to disclose the implications of the different management themes for potential future timber cutting, road construction and reconstruction, and discretionary mineral activities (as documented in the project file, timber cutting and road construction/reconstruction projections; and the minerals specialist report). The trend analysis considered such factors as budget, fire risk, and forest plan direction.

Analysis Tools

A geographic information system (GIS) was used for mapping purposes. All maps were reviewed and calibrated to reflect the most current information. GIS was also used to identify those Idaho Roadless Areas that overlap with neighboring States.

Analysis Information

The analysis of effects began with a review of the 2001 Roadless Rule Final EIS and associated specialist reports (USDA Forest Service 2000a-o). The 2001 Roadless Rule specialist reports provide a starting point, and many were updated with additional relevant information. Literature published since the release of the 2001 Roadless Rule Final EIS was reviewed and incorporated where appropriate. Public comments collected during scoping were considered. Each resource specialist report (available in the project file) provides further descriptions of the information used.

The analysis uses a consistent set of roadless area boundaries based on the latest information from national forests in Idaho (referred to as Idaho Roadless Areas). Not all forests are on an equal footing when it comes to roadless area boundaries. Some boundaries have remained unchanged for nearly 20 years, even though there have been activities within the roadless areas. Other forests have updated their boundaries during the forest plan revision process. This discrepancy is one of the reasons the State recognized the variation in roadless characteristics among roadless areas.

Differences in boundaries between those found in the 2001 Roadless Rule, Existing Plans, and this analysis are discussed in appendix A. Boundaries have been adjusted for a variety of reasons including land exchanges, correction of lines on a map, improved GIS technology, and to some degree development.

In addition, some refinements were made to the Idaho Roadless Rule based on an understanding of the intent of the State of Idaho Petition (see chapter 1 and appendix H). These adjustments are reflected in the analysis.

ANALYSIS BOUNDARIES

The analysis evaluates the implications of the prohibitions and permissions within Idaho Roadless Areas because these are the lands that would be affected. In the case of some resources, such as economics, the analysis boundary extends beyond the roadless areas. Cumulative effects were evaluated both at the State scale and the national scale

The potential effects on each resource were evaluated based on information regarding foreseeable actions (timber cutting, road construction/reconstruction, and discretionary mineral activities) that would be prohibited or permitted under each alternative over a 15 year time period, unless noted. This time period was used to evaluate the amount of disturbance that could occur over a reasonable planning horizon. Actions beyond this time period are speculative because of the potential changes to vegetative conditions, markets, and other influences.

Analysis Assumptions and Projections

The following subsections describe the analysis assumptions and projections regarding timber cutting, road construction/reconstruction, and discretionary mineral activities. This information was used to evaluate the Proposed Action and its alternatives throughout the EIS.

Each forest provided information regarding projects with timber cutting, removal, or sale; road construction/reconstruction; and the exploration/development of minerals that had occurred in roadless areas since the release of the 2001 Roadless Rule. Forests also provided information on any foreseeable future projects and the likelihood of their implementation based on budget. The interdisciplinary team developed projections for the Idaho Roadless Rule based on trends from the Existing Plans and from the 2001 Roadless Rule, and considering the Agency's flat budget trend and high interest in responding to fire risk (see the project record, Projections and Assumptions section).

Timber cutting, sale, and removal

Assumptions

- Budgets would continue to be flat. Primary focus for the foreseeable future is responding to fire risk.

- Vegetation management practices use many techniques to help maintain ecosystem composition. Techniques may include:
- Timber cutting²¹, including silvicultural treatments to improve forest health, as well as timber harvest²².
- Slashing and cutting of vegetation, including the limbing of trees to break the laddering effect of fuels.
- Prescribed burns, and wildland fire use.
- Any timber cutting under any alternative would be designed based on applicable forest plan standards and guidelines (for example, protection of riparian areas or habitat needs for species).
- Future timber harvest done within Idaho Roadless Areas would focus on protecting at-risk communities and municipal water supply systems from adverse effects of wildland fire. In addition, timber harvest would focus on areas where wind throw, blowdown, ice storm damage, or the existence or imminent threat of an insect or disease epidemic is significantly threatening ecosystem components or resource values that may contribute to significant risk of wildland fire; and areas where wildland fire poses a threat to, and where the natural fire regimes are important for, threatened and endangered species or their habitats.
- The volume of timber harvested between 2001 and 2006 and projected to be harvested between 2007 and 2011 provides a reasonable basis for projecting the amount of trees to be cut under each alternative.
- Where timber cutting, sale, and removal activities are prohibited, vegetation management activities — such as slashing, brush removal, and prescribed burns — are allowed and anticipated to be infrequent.

Projections/foreseeable actions

Table 3-2 projects the yearly average timber harvest that is reasonably foreseeable in Idaho Roadless Areas. This table is based on a combination of actual accomplishments and future projections. Timber harvest is used as an approximation for timber cutting (see the project record, Projections and Assumptions section).

Table 3-2. Projected timber harvest by alternative

Projected timber cutting	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Timber harvest yearly average (MMBF)	0.5	14	4
Timber harvest yearly average (acres)*	100	2,800	800

* based on the assumption that an average of 5 MBF/acre would be harvested.

²¹ Timber cutting is the overarching term for the cutting of any tree, whether or not it has commercial value.

²² Timber harvest refers to the volume of trees with commercial value that are cut and removed from the forest.

Road construction/reconstruction

Assumptions

- Trends for road development within Idaho Roadless Areas have varied from historically high levels to reduced levels over the past decade, and this reduced trend is expected to continue. Currently it is estimated that in areas allowing road development, less than 5 percent has been roaded. This represents less than 1 percent of the total roadless acres. (See the project record, roads specialist report.)
- Road construction or reconstruction would likely not see an increase in the foreseeable future (next 15 years) because the appropriated budget is flat or declining and there is no indication the trend will change. In addition, there is a backlog of road maintenance; therefore, there is no emphasis on constructing new roads that need to be maintained. If roads are constructed they are likely to be temporary.
- Roads developed to support timber harvest would generally be closed after the entry. Temporary roads constructed for timber harvest would be decommissioned as part of the contract package.
- Any road construction/reconstruction under any alternative would be designed based on applicable forest plan standards and guidelines.

Projections/foreseeable actions

Table 3-3 projects the yearly average road construction/reconstruction that is reasonably foreseeable in Idaho Roadless Areas under the various alternatives. This table is based on a combination of actual accomplishments and future projections of activities, similar to what was described in the timber cutting section.

Road miles associated with “other” reflect roads constructed/reconstructed for access to rights-of way, locatable minerals, and existing phosphates leases, including exploration. They may also include an incidental amount for recreation or other needs. Road miles associated with “timber” reflect roads constructed/reconstructed to access timber sales and are most likely temporary.

Table 3-3. Projected road construction/reconstruction by alternative

Projected miles of road construction/ reconstruction activities, annual average	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Permanent–other	0.8	0.8	0.8
Temporary–other	0.2	0.2	0.2
Reconstruction–other	0.0	0.0	0.0
Total	1.0	1.0	1.0
Permanent–timber	0	4	0.0
Temporary–timber	0	2	1.5
Reconstruction–timber	0	5	1.5
Total	0	11	3
Grand total	1.0	12	4
Decommissioning	1	4	3
Net Change	0	8	1

Mineral Activities

Assumptions

Saleables

- Demand for mineral materials (saleable minerals such as sand and gravel) from NFS lands would remain constant for the foreseeable future.

Locatables

- Locatable mineral activity would remain constant in Idaho Roadless Areas for the foreseeable future. If the price of metals continues to rise, there could be a corresponding increase in exploration activity on mining claims; however, this increase in exploration has not occurred over the past 7 years.

Leasables

General

- Industry would explore and develop leasable minerals on non-roadless areas before they venture into Idaho Roadless Areas, because it is more economical to do so.
- The current density of roads within Idaho Roadless Areas may not alone be adequate to allow leasable minerals to be efficiently and economically developed. Therefore, the prohibition of road construction or reconstruction would preclude any leasable mineral activity on lands where the prohibition exists. This is based on experience in Utah where the industry requested the BLM to suspend their oil and gas leases upon learning the provisions of the 2001 Roadless Rule were being retroactively applied (see the Minerals section).

- Directional drilling technology may be used in select circumstances but cannot be used as a principal means to develop geothermal or oil and gas resources. It is not expected that the industry would incur the extra expense of directional drilling without the promise of full economic enjoyment of the entire lease area. This is particularly true in Idaho Roadless Areas, where the complex geology and lack of existing commercial production greatly increase the financial risk of drilling.
- No surface occupancy (NSO) stipulations on leases would preclude development of oil, gas, geothermal, and phosphate resources because the NSO prohibition is expected to cover large areas with limited private inholdings or adjacent non-roadless area lands where occupancy would be allowed. This is based on experience in Idaho where no oil and gas wells have been drilled in NFS lands with an NSO designation (see directional drilling discussion).

Coal

- There is no potential for coal development because currently there are no existing leases or pending lease applications on NFS lands in Idaho and no demonstrated industry interest; consequently, no foreseeable activity is anticipated for exploration or development of coal reserves.

Oil and gas

- There would be no interest in leasing Idaho Roadless Areas for oil and gas in the Targhee portion of the Caribou-Targhee National Forest, because of a leasing decision made in 2000 that made all the forest unavailable for leasing or available only with a no surface occupancy lease stipulation (see general assumption above).

Geothermal

- Higher energy prices and new legislative incentives contained in the 2005 Energy Policy Act have increased the interest to explore and develop geothermal resources. Geothermal resources would be developed to some degree in Idaho Roadless Areas if road construction, reconstruction, and surface occupancy were permitted; however, as noted in the general assumptions, exploration and development would focus outside Idaho Roadless Areas.
- The six pending geothermal lease applications for 11,130 acres in the Boise National Forest, which includes about 7,000 acres of the Peace Rock Roadless Area, and the three geothermal lease applications for 5,590 acres in the Salmon National Forest, which includes about 33 acres of the West Panther Creek Roadless Area, are expected to be offered for lease in the foreseeable future. Whether or not the roadless acreage in these applications is actually leased depends on what kind of road restrictions, if any, apply.

Phosphate

- All known phosphate deposits would be developed if road construction, reconstruction, and surface occupancy were permitted.

Projections/foreseeable actions

Locatable

- Locatable mineral activities are projected to require less than 1 mile per year of road construction or reconstruction for the foreseeable future. This projection is included in the 1 mile of “other” road in table 3-3. If the price of metals continues to rise, there could be a corresponding increase in exploration on mining claims resulting in an increase in road construction and reconstruction within Idaho Roadless Areas.

Leasables

- Exploration and prospecting of existing leases is projected to require less than 1 mile per year of road construction or reconstruction for the foreseeable future. This projection is included in the 1 mile of “other” road in table 3-3.

Oil and gas

- It is anticipated there would be no oil and gas exploration conducted within Idaho Roadless Areas on the Targhee portion of the Caribou-Targhee National Forest. Therefore no roads or surface disturbance associated with oil and gas would occur within the Targhee roadless areas.
- Four wells could be drilled on the Caribou portion of the Caribou-Targhee National Forest over the next 15 years (Robison 2007). Each well would require 6 miles of new access road to be constructed. It is unknown whether or not these wells would be located in an Idaho Roadless Area. It is predicted these wells would not be capable of economic commercial production because of the geology, historical level of drilling activity and success rate, the near lack of infrastructure to support oil or gas development, and the lack of any historical or currently producing oil/gas wells/fields in southeast Idaho and surrounding area (Robison 2007).

Geothermal

- Although there is substantial acreage of Idaho Roadless Areas with geothermal potential, there are no projections about how much geothermal exploration and development would occur on Idaho Roadless Areas. There are no existing geothermal leases and no history of activity on NFS lands upon which to make an estimate. However, there could be some interest in leasing, exploration, and development of geothermal resources in the extended future.
- The only foreseeable geothermal activity is related to geothermal lease applications filed on the Boise and Salmon National Forests. Six geothermal lease applications have been submitted for 11,130 acres on the Boise National Forest, including 7,000 acres in the Peace Rock Roadless Area. Three geothermal lease applications have been submitted for 5,600 acres on the Salmon National Forest, including 33 of the West Panther Creek Roadless Area.

Phosphate

- There would be only one operating phosphate mine (Smoky Canyon Mine) affecting Idaho Roadless Areas for the foreseeable future (next 15 years) because it is the only mine that is in the process of expanding into roadless areas.
- Over a 16-year period (the length of the mine operation), the Smoky Canyon Mine would develop about 5 miles of haul road and disturb about 1,100 acres of the Sage Creek and Meade Peak Roadless Areas in the Caribou portion of the Caribou-Targhee National Forest. Because existing leases are involved, this development would occur under all of the alternatives.
- There would likely be some development of the 8,000 acres of leased phosphate deposits found in the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson Roadless Areas in the extended future (50 or more years). About 17 miles of new road construction/reconstruction would be needed to access these deposits.

Saleables

- Although no specific tonnage projection is made, the amount of mineral materials (sand, gravel, rock, fill dirt, etc.) that would be produced from Idaho Roadless Areas would be low and associated with other permitted activities.

3.2 Vegetation and Forest Health

INTRODUCTION

Idaho Roadless Areas provide a diverse array of vegetation ranging from the very dry pinyon-juniper woodlands to cold alpine forest types at high elevations. These lands are also in a variety of conditions from young forests to old, to healthy and unhealthy. The following analysis evaluates the potential risks to forest health from the prohibitions and permissions in the alternatives. Forest health is the perceived condition of forests based on age, structure, composition, function, vigor, level of insect and disease, presence and absence of exotic organisms, and resilience to disturbance including wildland fire. This analysis focuses primarily on the risks of insect and disease and exotic organisms, and potential influences of climate change. The Fuel Management section evaluates the resilience to disturbance such as wildland fire and the ability to treat hazardous fuels.

More than 21.4 million acres of Idaho consists of forest land. Approximately 76 percent of the forest land in Idaho is administered by national forests. Table 3-4 displays the approximate forest type acreage in the State and within national forests in Idaho.

Table 3-4. Forest cover types for the State of Idaho and national forests

Forest type	State	National forest ¹
	----- acres -----	
Pinyon/juniper	740,000	140,000
Douglas-fir	6,540,000	5,300,000
Ponderosa pine	1,540,000	1,080,000
Spruce/fir ²	3,830,000	3,430,000
Lodgepole pine	2,270,000	2,100,000
Grand fir/cedar/hemlock ³	3,180,000	1,790,000
Western larch	170,000	100,000
Other softwoods	470,000	460,000
Aspen/birch/cottonwood	860,000	540,000
Other hardwoods	210,000	110,000
Nonstocked	1,620,000	1,350,000

¹ Forest Inventory Analysis database (Miles 2007).

² Includes mountain hemlock.

³ Includes western white pine.

The predominant forest types in Idaho are Douglas-fir (31 percent), spruce/fir (18 percent), grand fir/cedar/hemlock (15 percent), and lodgepole pine (11 percent)²³. The tree species found in these forests are generally similar to those that would have existed prior to European settlement; however, existing individual forest types and species have changed substantially in some areas. Examples of forest types that have increased from historical conditions include Douglas-fir and the moist grand fir and hemlock forests of northern Idaho. Ponderosa pine, western larch, western white pine, and whitebark pine have been reduced. Douglas-fir has been reduced in coverage in the central Idaho mountains, and aspen declined steeply in eastern Idaho (Quigley 1997, pages 629, 888, 890, and 892). Wildland fire suppression, introduced exotic diseases (such as white pine blister rust), and past harvesting practices all contributed to these shifts in cover type amounts. In addition, wildland fire suppression and reductions in timber harvest from Federal lands have led to a change in vegetation structure and species composition and an increasing accumulation of forest fuels over large landscapes of most of the interior West, including Idaho Roadless Areas (USDA Forest Service 2000 and 2000c).

Acres of forest cover types from the forest inventory for Idaho Roadless Areas are not currently known.²⁴ However, a cover type map, modeled from the inventory data, is available. The cover type map appears to overestimate certain cover types (such as Douglas-fir). Noting this difference, the roadless area cover type abundance is approximately 40 percent Douglas-fir, 20 percent spruce/fir, and 8 percent lodgepole pine. All other forest types are less than 5 percent each. The non-forest types within the roadless areas are estimated to be 18 percent, including other vegetation types (grasslands, shrublands, meadows, and others), and barren areas (rock, ice, and others).

Approximately 16.2 million acres of forest land in Idaho are considered timberlands, or those non-reserved lands (not withdrawn from timber production by statute or regulation) that are capable of growing 20 cubic feet per acre per year or more of wood. The most recent inventory for the State (2004–2005)²⁵ estimates net volume of sawtimber trees at 189 billion board feet, an average annual net growth of more than 4

²³ The Forest Inventory and Assessment (FIA) database (Miles 2007) was used to estimate the extent of forest cover types and to display forest attributes, including volumes, size class, growth, and mortality. This information was used at both the State and national forest scales. The most recent FIA inventory reflects FIA plot measurements on more than 700 plots from 2004 and 2005, or 20 percent of the total plot grid. This information is updated annually; values for these attributes will change as additional plots are surveyed (10 percent of plots are inventoried annually). While the current inventory is not complete, it does reflect general forest attributes that are usable for general context at the State and national forest land ownership scale.

²⁴ A FIA cover type map was used to approximate the distribution of forest types in the Idaho Roadless Areas. This information was used, in lieu of the inventory, because the inventory is not sufficient at this time to accurately reflect the existing cover types within these areas. As the inventory measures additional plots, this information will become more reliable.

²⁵ 2nd measurement of 10 year annualized cycle. 10 percent of the states plots are inventoried each year.

billion board feet, with average annual mortality of 1.7 billion board feet over the same time period. Approximately 80 percent of the net volume, 65 percent of the net growth, and 94 percent of the mortality occurs on NFS lands (Miles 2007). Average annual removal of timber from NFS lands in Idaho from 2002–2006 was approximately 5 percent of the estimated average annual growth for 2004–2005 (USDA Forest Service 2007i and 2007j). These changes indicate an ongoing and substantial net increase in volume of wood fiber on NFS lands.

Most of Idaho's timberlands (68 percent) are 9-inch average diameter or more; the 5–8.9-inch class accounts for 10 percent and stands of less than 5 inch diameter account for 17 percent. Non-stocked areas contribute the remaining 5 percent of the size class total. National forest size classes are similar to the State averages (Miles 2007). A complete inventory for old-growth forests (also termed late successional forests) is currently not available across all national forest lands in Idaho. These forests form a portion of the acres within the 9-inch and more size class above.

FOREST HEALTH—INSECTS AND DISEASE: AFFECTED ENVIRONMENT

Insect and disease populations fluctuate based upon a number of circumstances, including warm and dry weather, overcrowding of trees, and trees damaged by fires. Frequently, several factors combine to weaken trees and increase their risk to insect and disease damage.

All forest trees in Idaho are subject to certain insect and disease agents. Most are native, with exceptions such as white pine blister rust, an introduced exotic. Insect and disease conditions become a forest health concern when they operate outside their historical range of variability, usually in response to changes in the forest composition and structure. Insects and diseases require suitable hosts (for example, tree species, size, forest structure) to successfully attack and damage trees. Climate and weather conditions can trigger or make outbreaks worse and intensify mortality. Because insects and disease require certain forest types and conditions to operate successfully, usually a landscape with appropriate tree species, of varying age and structure, are considered more resilient to large-scale outbreaks and mortality.

Management options vary by agent but usually include silvicultural options (thinning to reduce density, establishment of non-host trees, or change in stand structure). Tools to accomplish these objectives can include timber cutting—which includes timber harvest (removal and sale of commercial products)—and reforestation (planting of non-host tree species). Other methods may include preventative controls (such as tree spraying) or direct suppression activities (reducing populations through trapping) or prescribed burning.

Risk Mapping

Approximately 3.5 million acres of forest land in Idaho are at risk for serious insect and disease mortality, with 3.3 million of those acres occurring on national forests²⁶. The most recent estimates include more than 1.4 million acres within Idaho Roadless Areas where 25 percent or more tree mortality can be expected over the next 15 years. It should be noted that the predicted risk for the State and the Idaho Roadless Areas are approximately the same, from 16 percent to 18 percent, respectively for forest land.

Global climate change will have potential effects on fire frequency and severity and forest insect and disease relationships. Increased fire activity has been linked to effects of a warming climate, as has certain insect infestations in the western U.S. and Canada (USDA Forest Service 2007a). Depending on the magnitude of change, increased risk from insects and diseases could occur in Idaho forests.

The forest cover types described earlier in this document are susceptible to a suite of insects and diseases. The forest types most susceptible to damage by insect and/or disease agent include (USDA Forest Service 2004b, 2005a, 2006a):

Douglas-fir cover type. Forests composed of Douglas-fir are subject to a wide variety of agents that may cause extensive damage. In northern Idaho (north of the Salmon River), Douglas-fir is very susceptible to mortality from root disease. Douglas-fir bark beetle populations often increase with presence of disease, fire, or low-vigor trees. During outbreaks, the bark beetle can cause substantial mortality, particularly in larger diameter trees, even those appearing to be healthy. Recent outbreaks have been associated with wildfires, particularly after the severe wildfires of 2000. Recent estimates indicate that populations are declining because of moist conditions that returned in 2005. However, because of the large amount of Douglas-fir cover type and stand structures susceptible to the beetle, risk of future outbreaks remains. Western spruce budworm can create heavy defoliation, and repeated infestations create mortality. Forests south of the Salmon River are currently experiencing increasing budworm infestations.

Lodgepole pine cover type. The mountain pine beetle continues to be the most damaging bark beetle in Idaho. Lodgepole pine forests are particularly susceptible when trees reach an average diameter of 8 inches, 80 years old, and relatively high densities. Mortality levels have exceeded 2.5 million trees as recently as 2002. Recent

²⁶ In 1996, the Forest Service initiated a mapping effort to evaluate forest health risk on all forested lands in the U. S. A GIS database was created that displays NFS lands most at risk of mortality from insects and diseases. It is used in combination with fire regime condition class layer (Fuel Management section) to help set priorities at the national scale for addressing forest health problems (Lewis 2000). The forest health composite map was updated using the 2006 insect and disease risk map (USDA Forest Service 2007) with the Landscape Fire and Resource Management Planning Tools Project (LANDFIRE) rapid assessment for fire regime condition map (U.S. Department of Interior [USDI] Geological Services 2006). The 2006 risk map is used in this analysis. LANDFIRE is a 5-year, multi-partner project producing consistent and comprehensive maps and data describing vegetation, wildland fuel, and fire regimes across the United States; see <http://www.landfire.gov/index.php>.

estimates indicate lower mortality figures, and in some areas the beetle populations may be decreasing as suitable host trees become limited.

Whitebark pine cover type. Although this cover type is restricted to cold environments in Idaho, limiting its extent, whitebark pine is an ecologically important species. Recently the combination of mountain pine beetle infestations and white pine blister rust has created substantial mortality in larger diameter, cone-bearing trees. Recent surveys in northern Idaho have inventoried blister rust infection rates of up to 90 percent in regeneration as well.

Grand fir cover type. Grand fir forests have been experiencing increased infestations by western spruce budworm. The fir engraver bark beetle has recently declined in population; as recently as 2002 and 2003, surveys estimated this insect had killed 120 to 130 thousand trees in Idaho.

Subalpine fir cover types. Western spruce budworm, fir engraver, and western balsam bark beetle are considered threats to subalpine fir trees. Older trees are particularly susceptible to mortality. The balsam bark beetle has declined recently with increasing precipitation in the past few years; however, in 2002 and 2003 approximately 150 thousand trees were killed within the State. Increasing populations are occurring in southern Idaho.

Aspen Decline. A single causal agent for aspen mortality has not been identified. Rather, a combination of disease, insects, and droughty conditions appears to be responsible. Table 3-5 displays the estimated acres infested by principal damaging agent as recorded from aerial detection flights, 2002–2003 and 2005–2006.

Table 3-5. Principal insect and disease damaging agents in Idaho, as recorded from aerial detection flights, affected acres 2002–2006.

Damage agent	Acres affected (thousands)			
	2002	2003	2005	2006 ¹
Mountain pine beetle	339.3	344.4	519.5	307.3
Ips beetle	1.2	3.8	nd ²	nd
Western pine beetle	8.6	16.7	nd	1
Spruce beetle	.5	.8	nd	nd
Douglas-fir beetle	52.8	49.2	47.1	14.3
Fir engraver	112	152.1	56.8	12.9
Western balsam bark beetle	74.8	99.4	86.5	40.8
Western spruce budworm	82.2	160.2	137.3	281
Aspen decline	nd	nd	9.8	nd

¹Incomplete data; not all areas were surveyed in Idaho. Underestimates of areas affected.

²No data collected.

FOREST HEALTH—INSECTS AND DISEASE: ENVIRONMENTAL CONSEQUENCES

All Alternatives

Timber cutting. Timber cutting is defined here as any cutting of any trees for management purposes. Timber harvest is the process by which trees with commercial value are cut and removed from the forest to meet management objectives. Timber sale refers to a contractual process of selling the timber to a purchaser and implementing a series of harvesting requirements for what type, and how and when the trees are removed as specified by the Forest Service.

Timber cutting is a broader term and includes timber harvest (removal of commercial products) as well as other actions that result in the cutting of a tree with no removal of a commercial product, such as slashing, chipping, mulching, precommercial thinning, or personal use firewood. Timber cutting could be used to support activities such as trail maintenance, prescribed burning and timber stand improvement. However, because of the cost of these activities, such cutting is projected to be limited.

Timber sales are often used as a least-cost method (revenue is returned to the Federal treasury to offset the costs of preparing and carrying out the timber harvest) of managing vegetation to meet resource objectives or to achieve desired ecosystem conditions. These objectives or desired conditions include improving wildlife habitats, reducing fuels that may increase fire risk, recovering timber value from natural disasters such as windstorm or fire, reducing impact of insect and disease, and improving tree growth in addition to producing timber from the national forests.

Prescribed burning. Prescribed burning is another tool that may be used to reduce insects and disease and address general forest health concerns. However, prescribed burning often cannot be done without removal of some of the ladder fuels through thinning or limbing the lower branches, particularly in those forests that are over dense. If some of the biomass is not removed it may be difficult to control the prescribed burns or the burns may burn too hot. None of the alternatives would preclude the use of prescribed burning.

Roads and timber harvest. Roads may be required to support a timber sale, and frequently they must be constructed or reconstructed to meet timber harvest or other resource management objectives. Roads are needed to move equipment into the area and to haul logs or other forest products to the community where they will be processed. While timber can be harvested using helicopters or cable yarding systems from existing roads, the use of these methods depends on the value of the timber being removed, the terrain, and the distance to an existing road. Each timber sale contract specifies the yarding method and any permanent or temporary road construction and reconstruction required.

Timber purchasers may be required to complete needed road reconstruction to ensure public safety and to meet environmental protection objectives for road use. A roads

analysis is conducted to determine whether a new road is needed (36 CFR §212). When the Forest Service determines that roads are needed for other multiple-use activities, the roads are constructed to meet appropriate road specifications and retained for future use after the timber sale. By law (16 USC 1608 (b)), temporary roads are used only for the duration of the timber sale and then closed, decommissioned, or converted to a forest road. Even helicopter sales may require some authorized road construction, reconstruction, or temporary road construction to access landings for hauling logs (USDA Forest Service 2000 and 2000d).

Road spacing and distance from the nearest road have a direct effect on yarding costs of wood fiber. As the road spacing or distance from the nearest road increases, so does the average yarding distance for a given harvest unit. This affects turn speeds and production rates, which affect yarding costs. Frequently, the edge of a harvest unit farthest from the road reflects the maximum external yarding distance. External yarding distance dictates the size class of the yarding equipment needed to retrieve the material. This equipment size class, in turn, determines the road width needed. Generally, wider road spacing means longer yarding distances, which requires larger yarders and wider road widths (USDA Forest Service 1999b). The location of a road is particularly important in an area planned for cable logging. Roads located at the break (where the side slope changes from gentle to steep) provide better cable deflection, which results in larger payloads and less ground disturbance (USDA Forest Service 1999b).

The trend in silvicultural practices is shifting away from traditional even-aged management to even-aged management with leave trees, two-aged management, and uneven-aged managed stands. These practices are used to meet multiple ecological objectives. Multi-story and multi-age stands often require thinning and other silvicultural treatments with greater frequency, thus needing road access more often. Thinning to remove excessive forest fuels, before using prescribed fire, or to treat diseased or insect-infested stands is often economically feasible only if a road system is present (USDA Forest Service 1999b). From 2002 to 2006, clearcutting on Idaho's national forests accounted for only 7 percent of the total cutting method used on the 49.6 thousand acres harvested (USDA Forest Service 2007i and j). This level is expected to continue into the future.

2001 Roadless Rule (No Action)

Under the 2001 Roadless Rule, timber cutting meeting one of the exceptions found at 36 CFR 294.13(b) and not requiring road construction and reconstruction would be used to address forest health improvement objectives (for example, suppressing insect infestations, reducing the spread of disease, or thinning to improve vigor, and fuels reduction).

Helicopter harvest would be the principal yarding method under the 2001 Roadless Rule for timber sales, except for those areas that may be accessed by existing roads that do not require reconstruction. Forest health objectives could be completed using means other than timber sale contracts, but these would require appropriated funds. Because

of the lack of road access, timber cutting (exclusive of timber sales) designed to meet forest health objectives is likely to be minimal because of the high cost of treatment and available appropriated funds for such work. Most lands within one-quarter to one-half mile of an existing road would continue to be managed using timber harvest or other methods of treatment where appropriate. However, cost per acre would increase substantially and proportionally with distance of the project from the nearest road.

Because of the limitations, about 1,500 acres over 15 years are projected to be treated in Idaho Roadless Areas under the exceptions. Almost all of the 1.4 million acres identified to incur more than 25 percent mortality loss over the next 15 years would remain untreated (table 3-6). These areas would continue to decline in forest health and would become less resilient to large-scale outbreaks.

Table 3-6. Acres of at high risk of insect and disease by alternative

	Wild Land Recreation	Primitive	Backcountry	GFRG	Forest Plan Special Areas	SAHTS¹
Idaho Roadless Rule	0	0	1,445,000	0	0	0
Existing Plans	178,000	298,000	731,000	187,000	51,000	0
Idaho Roadless Rule	194,000	225,000	939,000	26,000	51,000	10,000

¹ SAHTS – Special Areas of Historic and Tribal Significance

Existing Plans

Under Existing Plans, timber cutting is permitted in management prescriptions similar to Backcountry and General Forest, Rangeland and Grassland (GFRG) themes. Roads could be constructed or reconstructed to provide access for timber harvest. Timber cutting could also be used in those areas that have road access. Based on trend information, about 165 miles of road are projected to be constructed/reconstructed over the next 15 years to support timber harvesting²⁷. Timber cutting is projected to occur on about 42,000 acres over 15 years. Most of the timber cutting on these acres would be to done to improve forest health conditions and treat hazardous fuels.

Of the 1.4 million acres at risk to insect and disease mortality, approximately 187,000 acres are within the GFRG theme and 731,000 acres are in the Backcountry theme (table 3-6). Existing Plans provide opportunities to treat high priority insect and disease areas through timber cutting on these lands.

The ability to construct roads with timber harvest within GFRG, and in some areas Backcountry, also reduces the cost of other methods (such as mechanical treatment and vegetation cutting other than timber harvest) that also contributes to meeting forest

²⁷ About 180 miles total of road construction/reconstruction are projected to occur over the next 15 years. Of that amount, 165 miles would be in support of timber cutting and 15 miles in support of other access needs such as mineral leasing and exploration.

health objectives. However, road construction stills requires the use of appropriated funding that is currently limited for such projects.

It is unlikely that any substantial impact would occur on forest health conditions over the next 5 years. However, over the next 15 years, considering the amount timber harvest projected under Existing Plans, Existing Plans are likely to be effective to some degree in addressing forest health concerns in Idaho Roadless Areas.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, the Primitive and Backcountry themes would permit timber cutting to improve threatened, endangered, proposed or sensitive species habitat; or to maintain or restore the characteristics of ecosystem composition and structure or to reduce the significant risk of wildland fire effects. In the Backcountry theme, roads could be constructed or reconstructed to address these limited forest health components. The principal objective is to protect at-risk communities and municipal water supply systems, as well as to address (1) areas where wind throw, blowdown, ice storm damage, or the existence or imminent threat of an insect and disease epidemic is significantly threatening ecosystem components or resource values that may contribute to significant risk of wildland fire; and (2) areas where wildland fire poses a threat to, and where natural fire regimes are important for, threatened and endangered species or their habitat.

In the GFRG theme, timber cutting and road construction and reconstruction would be permissible. The areas identified within the GFRG theme would have the most potential to be treated, since all forms of treatment, including both timber harvest and timber cutting are allowed, and supporting road construction/reconstruction can occur. Timber cutting in the Backcountry theme would be done on a limited basis and would be done to retain roadless characteristics and meet specific forest health objectives. Timber cutting in Primitive would rarely be done and would maintain roadless characteristics. Cutting in these areas would be for stewardship purposes (fuels reduction, forest health) and would be light on the land (focusing on what is left behind, not what is removed). Based on the management direction about 45 miles of road construction/reconstruction associated with timber harvest are projected over the next 15 years²⁸. Timber cutting is projected to occur on about 12,000 acres over the next 15 years.

Of the 1.4 million acres at risk to insect and disease mortality, approximately 26,000 acres are within the GFRG and 939,000 acres in the Backcountry theme (table 3-6). The Idaho Roadless Rule provides opportunities to treat high priority insect and disease areas through timber harvest, since up to 12,000 acres are projected to be harvested over

²⁸ About 60 miles total of road construction/reconstruction are projected to occur over the next 15 years. Of that amount, 45 miles would be in support of timber cutting and 15 miles in support of other access needs such as mineral leasing and exploration.

a 15-year period, most of which would occur in the GFRG theme and some in the Backcountry theme.

The ability to construct roads with timber harvest in GFRG and to a limited degree in the Backcountry theme also reduces the cost of other methods (such as mechanical and timber cutting other than timber harvest) that may contribute to forest health objectives. However, road construction would still require the use of appropriated funding that is currently scarce for such projects.

It is unlikely that any substantial impact would occur on forest health conditions over the next 5 years. However, over 15 years, considering the amount lands projected for timber harvest, the Idaho Roadless Rule is likely to be effective in addressing forest health concerns in those areas that are treated.

FOREST HEALTH—INSECTS AND DISEASE: CUMULATIVE EFFECTS

The primary cumulative impact of all alternatives is the continuing change in vegetation structure and species composition, and the accumulation of vegetation and forest fuels. Prohibition of road construction/reconstruction under the 2001 Roadless Rule within Idaho Roadless Areas, and in all themes other than the GFRG theme and to some degree the Backcountry theme for the Existing Forest Plans and Idaho Roadless Rule, would result in a large proportion of the roadless areas remaining largely inaccessible (because of lack of economic feasibility) to equipment necessary to accomplish vegetation management for forest health objectives.

Some of these lands are unsuitable for timber production; on other lands, road construction is not currently economically feasible. Most lands within one-quarter to one-half mile of an existing road would continue to be managed using timber harvest or other methods of treatment where appropriate. However, cost per acre would increase substantially and proportionally with distance of the project from the nearest road. Trees inside these economically inaccessible portions of the roadless areas that are killed by insects, disease, windthrow, or fire would deteriorate and add to fuel loading. Wildland fires that subsequently burn these areas may cause severe impacts on soil and water resources because higher concentrations of natural fuels would cause the fire to burn hotter. However, even if road construction/ reconstruction in Idaho Roadless Areas were permitted, it may not be possible to treat many of these acres because of resource concerns and the high cost of road construction.

It is also reasonably foreseeable that global climate change will have potential effects on fire frequency and severity and on forest insect and disease relationships. Increased fire activity has been linked to effects of warming climate, as has certain insect infestations in the western United States and Canada (USDA Forest Service 2007a). Depending on the magnitude of change, increased risk from insects and diseases could occur in Idaho forests. If this occurs, areas under the GFRG theme are more likely to be treated, whereas Backcountry and Primitive themes are less likely to be treated.

The emphasis in the National Fire Plan (NFP), Healthy Forests Initiative (HFI) and Healthy Forests Restoration Act (HFRA) encourage addressing insect and disease issues; however, none of these policies dictate site-specifically where actions should be taken. This analysis used projections based on implementing these policies.

NOXIOUS WEEDS: AFFECTED ENVIRONMENT

Although the exact acreage is unknown, it is estimated that more than 8 million acres of Idaho lands are severely infested by one of the weeds designated by the State of Idaho in 1999 (Idaho Department of Agriculture [IDA] 1999). Currently, there are 57 listed noxious weed species in the state of Idaho. Noxious weeds can influence ecosystem health in several ways and can contribute to declining native plant communities by (USDA Forest Service 2000):

- Causing a decline in aquatic-riparian and terrestrial habitat for wildlife;
- Reducing forage for grazing;
- Potentially increasing water runoff, sediment delivery, and soil erosion;
- Causing a potential decline in water quality;
- Reducing biological diversity;
- Increasing negative impacts in native plants associated with Native American tribal interests or rights, and;
- Increasing costs associated in maintaining quality of recreation.

Noxious weeds become established where suitable environments exist. Frequently, suitable habitats are created by soil disturbance where native vegetation is temporarily removed and weeds invade the site. Even intact ecosystems without disturbance, such as bunchgrass ecosystems, can be invaded successfully by certain species of noxious weeds.

Areas such as road cuts and fills, mining, timber harvest sites, and gravel pits can serve as long-term vectors that aid the spread of noxious weeds.

Noxious weeds can spread through many mechanisms, including motor vehicles, other off-road motorized equipment, wildlife, livestock, and humans. Once established, noxious weeds can be very difficult and expensive to control, and almost impossible to eradicate. Chemical, cultural, mechanical, and biological control methods are available for control measures; however, effectiveness depends on the targeted weed species.

Of the estimated 8 million acres of noxious weed infestation in Idaho, about 223,000 acres on NFS lands have been geo-referenced and reported in the Idaho Department of Agriculture (IDA) data base (IDA 2007). Major weed species include meadow hawkweed on the north Idaho National Forests, rush skeletonweed in central and southwestern Idaho, and several thistles in southeastern Idaho. Spotted Knapweed occurs on most forests.

More than 28,000 acres infested with noxious weeds have been inventoried in Idaho Roadless Areas. This is approximately 0.3 percent of Idaho Roadless Areas, compared to 1 percent of all NFS lands. However, not all roadless areas, national forests, or other ownerships have been surveyed for noxious weeds and reported to the IDA database.

NOXIOUS WEEDS: ENVIRONMENTAL CONSEQUENCES

All Alternatives

Wildfires are likely to continue in the Idaho Roadless Areas. Wildfires can create suitable habitat for noxious weeds and other invasive plants, especially those in the grasslands, shrublands, and dry forest types (such as ponderosa pine and some of the Douglas-fir cover types).

Global climate change would have potential effects on noxious weeds and fire frequency/severity. Increased fire activity has been linked to effects of a warming climate (USDA Forest Service 2007b). Depending on the magnitude of change, increased risk of noxious weed establishment could occur in Idaho forests, since fire temporarily removes native vegetation and can provide suitable conditions for noxious weed establishment, or expansion of existing populations. Additionally, future plant communities may become more or less susceptible to noxious weed encroachment. However, because of the uncertainty of the actual climate conditions that may vary across the State, it is not possible to predict the actual outcomes at this time.

2001 Roadless Rule (No Action)

Under the 2001 Roadless Rule road construction/reconstruction is generally prohibited. About 15 miles are projected to be constructed over the next 15 years under the 2001 Roadless Rule, primarily to access existing mineral developments. Based on the general prohibitions and the limited amount of roads that are projected to be constructed in the future in Idaho Roadless Areas, there would be a limited noxious weed to spread under the 2001 Roadless Rule.

Existing Plans

The Existing Plans generally prohibit road construction/reconstruction in management prescriptions similar to Wild Land Recreation and Primitive themes. It is likely there would be no spread of noxious weeds in these areas (about 3,452,000 acres).

Under Existing Plans, road construction/reconstruction is allowed in management prescription similar to the GFRG theme and in some areas the Backcountry theme, increasing the likelihood of introducing and spreading road-transported noxious weeds and other invasive species. Survey records (IDA 2007) indicate that of the 1,262,400 acres of GFRG, about 8,300 acres currently have noxious weeds. About 180 miles of road construction/reconstruction are projected. It is likely these activities would be dispersed across Idaho Roadless Areas. Noxious weeds and other invasive are likely to

expand in these areas. Areas within GFRG themes would have the most potential for introduction and spread, followed by Backcountry and then Primitive themes.

Any increase in mineral or geothermal development could potentially increase the introductions of weeds, due both to road access needs and to the disturbance at individual sites themselves. It is anticipated that best management practices, including appropriate weed treatment strategies, would be used to mitigate this potential adverse impact.

The Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule would prohibit road construction/reconstruction in the Wild Land Recreation, Primitive, and Special Areas of Historic and Tribal Significance (SAHTS), with few exceptions. It is likely there would be no spread of noxious weeds in these areas (about 3,103,500 acres). Survey records (IDA 2007) indicate that of the 609,500 acres in GFRG about 2,600 acres currently have noxious weeds. Timber harvest and road construction would be allowed in GFRG and to a more limited degree in Backcountry; therefore, these areas have the most potential for weed spread. About 60 miles of road construction/reconstruction over 15 years to support all activities allowed are projected. Areas where roads are constructed would provide disturbed and exposed soil for weeds to expand to. Under the Idaho Roadless Rule it is likely there would be minimal increase in weed spread.

Any increase in mineral or geothermal development could potentially increase the introductions of weeds, due both to road access needs, and the disturbance at individual sites themselves. It is anticipated that best management practices, including appropriate weed treatment strategies, would be used to mitigate this potential adverse impact.

NOXIOUS WEEDS—CUMULATIVE EFFECTS

Roads are often the primary vectors for noxious weed establishment and spread. Current State and Federal activities and authorities (such as the Idaho Invasive Plan [IDA 2005] and the National Strategy and Implementation Plan for Invasive Species Management [USDA Forest Service 2004a]) address some invasive species and their prevention and spread. Other programmatic policy and management direction can also indirectly influence the ability to construct roads. The Roads Policy and Travel Management Policy can provide information on what roads are needed and unneeded, and which roads would remain open or closed. As noted in the Road Construction/Reconstruction section, roads are being decommissioned more than they are being constructed; therefore cumulatively there are fewer roads on the landscape. As roads are decommissioned, fewer roads are constructed and with additional emphasis on noxious weed management and prevention, there would be little cumulative effects from the alternatives.

CARBON STORAGE AND CLIMATE CHANGE: AFFECTED ENVIRONMENT

Coniferous forests contain large amounts of carbon, stored as biomass both in the above-ground biomass and soil component (Smith et al. 2004). Forests accumulate carbon through the process of photosynthesis, which converts sunlight and water to carbon. As the majority of forest ownership in Idaho is on national forest lands, national forests are an important source for carbon storage.

Forests in the U.S. are thought to have been in approximate carbon balance from 1600 to 1800. A large pulse of carbon release occurred during the 1800s, largely due to utilization of forests (cutting) and land conversions, primarily to agricultural uses. The last century saw a re-growth of forests that had been harvested and the re-establishment of forests on abandoned agricultural lands. These conditions resulted in net carbon storage, even while intensive harvesting practices were occurring simultaneously. In the West, the effects of fire suppression are thought to have been a contributor to this increase (Birdsey et al. 2006). This sequence of events was more prevalent in the eastern and southern U.S. than the West, including Idaho. Current forest carbon density in Idaho is estimated to range from 36 to 45 tons/acre. Carbon storage is thought to be increasing on Idaho forestlands from 0 to 0.4 tons per acre/per year as recently as 2005 (Woodbury et al. 2007).

Stand-replacing fire regimes can change the amount of carbon released into the atmosphere. Stand-replacing fires switch forest ecosystems from a carbon sink to a net source of carbon added to the atmosphere as decomposition exceeds photosynthesis. One study in Yellowstone National Park indicated that equilibrium values of carbon storage were resistant to large changes in fire frequency (intervals between fires). Because of current long fire intervals and rapid regeneration of trees, most rapid changes in carbon storage occur in the first century following fire, and carbon storage is similar for stands of different ages. However, modeled conversions of vegetation states from forests to non-forest vegetation indicate there could be a large impact on landscape carbon storage, and this process is likely to be important for many forests (Kashian et al. 2006).

Effects of global climate change on forest types and species distribution has become an important issue as the warming of the global climate has become indisputable (Thomas et al. 2001, Walther et al., 2002, Parmesan and Yohe 2003, Root et al. 2003). Forest Service research results from one analysis predicted that existing forested ecosystems and their constituent species are projected to change in spatial location, extent, and abundance in the western U.S., including Idaho (Rehfeldt et al. 2006).

Exact magnitude and rapidity of climate change is uncertain, especially at finer scales such as landscapes within a forest. General conclusions in the western U.S. include temperature and precipitation increases, but also high variability in annual precipitation, including severe drought (Fenn et al. 2006). Modeling indicates the importance of the periodicity of precipitation and of the interactions between temperature and precipitation controlling the distribution of plant communities and

their species. Finer scale modeling of potential climate change effects on vegetation is needed (Rehfeldt et al. 2006).

CLIMATE CHANGE: ENVIRONMENTAL CONSEQUENCES

Environmental consequences on carbon storage and climate change are presented within the framework of two competing strategies: passive and active management.

Active management includes adaptive responses as additional information on this subject is accumulated, and monitoring results of actual management effects are evaluated. Active (adaptive) management strategies would generally promote human intervention to mitigate climate change effects and proactively participate with evolutionary processes through management (Tchebakova et al. 2005). Because of the uncertainty and complexity of the effects of climate change, predictive models pinpointing locations where plant communities and species can be sustained will need to be developed (Rehfeldt et al. 2006).

Passive management includes reserve networks that generally promote natural processes. As they relate to carbon storage and climate change, these strategies would include permitting plant communities and their species to be allowed to adapt to the changing circumstances, relying on evolutionary processes to control re-assembly of species and genotypes within species, with the new climatic conditions presented (Noss 2001).

This evaluation of effects is in line with the general scenarios presented under the Columbia River basin analysis in 1997 (Quigley et al. 1997).

The 2001 Roadless Rule (No Action)

The 2001 Roadless Rule is the most similar to the passive strategy, with modifications that include seven exceptions for road construction/reconstruction and four exceptions for timber harvest and cutting. One of the exceptions includes restoration of ecosystems, so the 2001 Roadless Rule does allow some human management. However, because of the lack of access anticipated from limited road development, restoration costs could potentially be high. Only about 1,500 acres are projected to be actively treated for restoration purposes over the next 15 years. Most of the plant communities and species in Idaho Roadless Areas would be allowed to re-adjust to the changing climatic conditions without human intervention.

Existing Plans

Existing Plans are more closely aligned with active management strategies where roads are allowed, because of the management permissions for road construction/reconstruction in the GFRG theme. Providing access through road construction/reconstruction should reduce the cost of potential restoration activities. About 42,000 acres are projected to be harvested over a 15 year period, generally to restore ecosystems or reduce fire risk. Although more of the plant communities and

species in Idaho Roadless Areas could potentially benefit from active management, most of the acres would not likely be available for management considering the amount of acres that are in management prescriptions similar to Backcountry, Primitive, SAHTS, and Wild Land Recreation themes. Plant communities and species within those themes would most likely be allowed to re-adjust to the changing climatic conditions without human intervention.

The Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule incorporates both passive and active management strategies. Passive management strategies are reflected in Wild Land Recreation, Primitive and SAHTS. Active management is reflected in GFRG, and to a lesser degree in Backcountry. About 12,000 acres over 15 years are projected to be generally to restore ecosystems or reduce fire risk. Most of the plant communities and species within Backcountry, Primitive, SAHTS, and Wild Land Recreation themes would most likely be allowed to re-adjust to the changing climatic conditions without human intervention.

CLIMATE CHANGE: CUMULATIVE EFFECTS

It is reasonably foreseeable that global climate change will have potential effects on fire frequency and severity and forest insect and disease relationships. Increased fire activity has been linked to the effects of a warming climate, as have certain insect infestations in the western U.S. and Canada (USDA Forest Service 2007a). This increased fire activity could lead to increased emissions of carbon dioxide and other greenhouse gases from wildfires, and possibly to decreased stored carbon in western forests and rangelands (USDA Forest Service 2007b).

In a general sense, as long as fire-affected ecosystems recover at the same rate as fires consume biomass and surface fuels, the net effect of fire on the carbon in the atmosphere or stored in ecosystems will be approximately neutral. If the frequency, extent, or severity of fire should increase because of changing climate or management practices, then terrestrial carbon storage will decrease and the carbon in the atmosphere will increase (USDA Forest Service 2007b).

Under a changing climate, the trajectories of vegetation recovery after fire may also change, leading to different potentials for ecosystem carbon storage. The exact mechanisms and magnitude of this change are still under research (USDA Forest Service 2007b).

Future research, combined with effective strategies that include increased carbon storage capabilities, could help offset the increase in greenhouse gases. These strategies could also address climate change effects on national resources (USDA Forest Service 2007c, d, e, f, g). These strategies have yet to be developed.

3.3 Fuel Management

INTRODUCTION

Although wildland fires play an integral role in many forest and rangeland ecosystems, decades of efforts directed at extinguishing most fires that burned on public lands have disrupted the natural fire regimes that once existed. Moreover, as more and more communities develop and grow in areas that are adjacent to fire-prone lands in what is known as the *wildland-urban interface (WUI)*, wildland fires pose increasing threats to people and to public and private property.

The National Fire Plan (NFP) was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts on communities while ensuring sufficient firefighting capacity and safety for the future. The NFP addresses five key points: firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability (USDA Forest Service and USDI 2000).

The NFP established an intensive, long-term hazardous fuels reduction program in response to the risks posed by heavy fuels loads, which were the result of decades of fire suppression activities; sustained drought; and increasing insect, disease, and invasive plant infestations. Hazardous fuels reduction treatments are designed to reduce the risks of catastrophic wildland fire to people, communities, and natural resources, while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity, and dynamics. Such treatments accomplish these goals by removing or modifying wildland fuels to reduce the potential for severe wildland fire behavior, lessen the post-fire damage, and limit the spread or proliferation of invasive species and diseases. Treatments are accomplished using a variety of tools, including prescribed fire, mechanical thinning, timber harvest, herbicides, grazing, or combinations of these and other methods. Treatments are being increasingly focused on the expanding WUI areas.

The Healthy Forests Initiative (HFI), initiated by President Bush in August 2002, and the Healthy Forests Restoration Act (HFRA) ([P.L. 108-148](#)), approved by Congress in December 2003, have equipped land managers with additional tools to achieve long-term objectives in reducing hazardous fuels and restoring fire-adapted ecosystems.

The goals and objectives of hazardous fuel reduction have evolved over the past seven years. In October 2000, the Forest Service issued the Cohesive Strategy in response to GAO report RCED-99-65 (USDA Forest Service 2000q). The 2000 Cohesive Strategy established a framework to restore and maintain ecosystem health in fire-adapted ecosystems in the West. The Cohesive Strategy focused on the need to address “uncharacteristic wildfire effects,” which is an increase in wildfire size, severity and resistance to control, and the associated impact on people, property, and fire fighter safety, compared to that which occurred in the native system.

In 2006 the Cohesive Strategy was expanded to also address “unwanted wildfire effects” (USDI, USDA Forest Service 2006). Unwanted wildland fire is any wildland fire in an undesirable location or season, or burning at an undesirable intensity, spread rate, or direction. In general, wildfire is unwanted in WUI. Hazardous fuels treatments to reduce the risk of unwanted wildfire are generally those that provide for conditions where firefighters can safely suppress fire or where the risk of stand-replacing wildland fire is reduced.

The criteria for prioritizing lands for hazardous fuels treatment generally correspond to: (1) closest proximity to communities at risk in the WUI; (2) strategic areas outside the WUI that prevent wildland fire spread into communities or critical infrastructure; (3) areas outside of WUI that are in condition classes 2 or 3; and (4) other considerations.

The analysis evaluates the relative ability to treat hazardous fuels primarily within the WUI and municipal watersheds, because these are the major focus areas of the NFP, HFRA, HFI and congressional budget direction. The prohibitions and permissions for road construction or reconstruction and timber cutting, sale, or removal contained in the 2001 Roadless Rule, Existing Plans, and the Idaho Roadless Rule influence the ability to treat hazardous fuels.

Road construction/reconstruction. The ability to construct or reconstruct roads may affect the ability to conduct hazardous fuel reduction projects because of two primary factors: (1) lack of road access makes the treatment infeasible (technologically infeasible); or (2) lack of road access increases the costs of treatment to a point where they are economically infeasible.

Tools. Prescribed fire and mechanical treatments are the most commonly applied methods for addressing hazardous fuels. Mechanical hazardous fuels treatments generally include commercial and non-commercial timber harvest, thinning, chipping, and masticating (Graham et al. 2006, Rummer 2006).

Related to uncharacteristic wildland fire. The 2001 Roadless Rule permits the cutting, sale, or removal of generally small-diameter timber if it maintains or restores the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildland fire effects, within the natural range of variability created by the natural fire regimes. This is defined as “uncharacteristic wildland fire.” Generally, actions taken would be in fire regimes I, II or III and condition class 2 or 3, with the intent of restoring the natural fire interval process.

Related to unwanted wildland fire. Generally, actions taken to address uncharacteristic wildfire would also address unwanted wildland fire; however, in some situations some actions may be necessary in fire regimes IV or V and/or in condition class I. For example, lodgepole pine forests are in fire regime IV, and mountain pine beetle attacks are part of their natural lifecycle, as is stand-replacing fire. If these areas are located adjacent to a community, it may be desirable to break up the continuity of the lodgepole pine or create a fuel break around the community, so the stand-replacing fire, in this case an unwanted wildfire, doesn’t affect the community.

Fire Prevention. Fire prevention was also evaluated because there may be a difference in the alternatives relative to this element. The indicator is number of acres assigned to management themes with “road construction permitted” compared to “road construction prohibited.”

Other elements not evaluated in detail. The analysis does not evaluate potential consequences related to escaped wildland fire, emergency fire prevention costs, fire fighter safety, or annual acreage burned by wildfire, because the alternatives do not influence these elements in different ways (Fire Management Specialist Report 2007, available in the project record).

AFFECTED ENVIRONMENT

Natural disturbances such as fire, wind, and insects and diseases, help shape forests. In Idaho, periodic fire is the dominant disturbance process that changes forests. Although fire is widespread, it is seldom uniform; every forest has its own characteristic pattern of fire intensity, frequency and size. Fire regime and condition class are used to characterize fire.

“Fire regime” describes the historical pattern of fire: how often (frequency); how hot (intensity); and how big (scale). It describes natural fire in terms of fire-return interval and amount of replacement of the upper life-form²⁹ (Hardy et al. 2000). Fire regimes are classified into five categories:

- I – Frequent, low to mixed severity: (0–35 year return interval, less than 75 percent of the upper life-form replaced). Generally low elevation interior West ponderosa pine forests or mountain grasslands.
- II – Frequent, high severity: (0–35 year return interval, greater than 75 percent of the upper life-form replaced). Generally low- to mid-elevation mountain meadows and aspen/conifer woodlands.
- III – Less frequent, mixed severity: (35–100+ year return interval, less than 75 percent of the upper life-form replaced). Generally mixed conifer, dry Douglas-fir, or whitebark/lodgepole pine forests.
- IV – Less frequent, high severity: (35–100+ year return interval, greater than 75 percent of the upper life-form replaced). Generally lodgepole pine forests and sagebrush shrublands.
- V – Infrequent, high severity: (200+ year return interval, greater than 75 percent of the upper life-form replaced). Generally, cedar/hemlock and high-elevation spruce/fir forests.

²⁹ Upper life form refers to the upper portion of the vegetation. For example in forested ecosystems it refers to the overstory trees; and in shrubland ecosystems it refers to the taller shrub component.

“Condition class” (also referred to as fire regime condition class [FRCC]) describes the departure from historical conditions based on the number of missed fire cycles and the amount of change in forest structure and species composition. A qualitative risk ranking is assigned to each condition class: low, moderate, high. The chance of losing key ecosystem components in wildland fire increases from condition class 1 (lowest risk) to condition class 3 (highest risk)³⁰. “Risk” is not defined as the probability of a fire occurring; rather, it refers to the potential harmful effects to key ecosystem components that may occur because of altered vegetation composition and structure and to the uncharacteristic wildfire effects that can occur once a wildland fire ignites and burns.

Condition classes are defined as:

Condition class 1 – Little departure from the natural fire regime and natural range of variability; risk of losing key ecosystem components is low;

Condition class 2 – Moderately departed from the natural fire regime and natural range of variability; risk of losing key ecosystem components is moderate;

Condition Class 3 – Highly departed from the natural fire regime and natural range of variability; risk of losing key ecosystem components is high.

About 94 percent of Idaho Roadless Areas are classified into fire regimes and condition classes. The unclassified areas are rock, water, snow or ice, and bare soil, or are developed areas such as transportation corridors, mines, quarries, home sites, or other kinds of features that are not described by the fire regimes.

Idaho Roadless Areas generally fall into three fire regimes: I (frequent, low to mixed severity); III (less frequent, mixed severity); and IV (less frequent, high severity) (table 3-7). Within these categories, about 50 to 80 percent are in condition class 2, which means they have moderate departures from the natural fire regime. Generally, these areas have missed at least one fire cycle; therefore, they are likely to be moderately overstocked. About 440,000 acres (5 percent of Idaho Roadless Areas) are in condition class 3 and have significantly departed from their historical fire frequency by missing multiple cycles. The risk of losing ecosystem components is high, with dramatic changes to fire size, intensity, landscape patterns, or vegetation. About 3.4 million acres of high priority areas (fire regimes I, II, and III, in condition classes 2 and 3) overlap Idaho Roadless Areas (table 3-7).

³⁰ The fire regime condition class (FRCC) information was derived from the LANDFIRE Rapid Assessment (RA) (USDI Geological Survey 2006). Idaho is covered by the Northern and Central Rockies, Great Basin, and Northwest LANDFIRE map zones, although the majority of the State is in the Northern and Central Rockies. The RA process was a regional-scale effort to produce maps and models of potential natural vegetation groups, reference fire regimes, and fire regime condition class for the conterminous United States. RA data are intended for national- to regional-scale strategic planning, broad ecological assessments, and resource allocation. RA products are designed to fill data needs ahead of the release of LANDFIRE National products and will be replaced by LANDFIRE National data as they become available.

Table 3-7. Acres of fire regime and condition class and percent of total acres in Idaho Roadless Areas

Idaho Roadless Areas			Condition class acres (percent of fire regime acres)		
Fire regime	Acres	Percent of area	1	2	3
FR I	1,978,400	21	250,600 (13)	1,528,200 (77)	199,600 (10)
FR II	44,800	<1	10 (<1)	23,200 (52)	21,600 (48)
FR III	2,948,200	32	1,255,000 (43)	1,581,400 (54)	86,800 (3)
FR IV	3,719,400	40	566,800 (15)	3,019,200 (81)	133,400 (4)
FR V	72,400	<1	64,700 (89)	7,700 (11)	10 (<1)
Unclassified	540,300	6			
Total	9,304,200	100	2,137,100 (25)	6,159,700 (70)	441,400 (5)

Wildland urban interface. In the 2001 Roadless Rule Final EIS, WUI was described based on five population classes developed from the population information in the LandScan Global Population Database for 1998 (Lockheed Martin Energy Research Corporation 1999). Since the 2001 Roadless Rule, States have been defining WUI per direction from the NFP and HFRA. Direction encourages development of community wildfire protection plans. To facilitate this process, the Idaho State Fire Plan Working Group was formed.³¹ In Idaho, community wildfire protection plans are developed and updated at the county level and are referred to as county wildfire protection plans (CWPP). Currently, all counties in Idaho have CWPPs (Idaho Department of Lands [IDL] 2007).

About 1 million acres (12 percent) of Idaho Roadless Areas are in the WUI. In general, wildfire is unwanted in WUI; hazardous fuels treatments to reduce the risk are generally those that provide for conditions where firefighters can safely suppress fire or where the risk of stand-replacing wildland fire is reduced. About 40 percent (450,000 acres) of the WUI are in high priority areas (fire regimes I, II, and III, and condition classes 2 and 3) (table 3-8).

Table 3-8. Acres of fire regime, condition class and percent of total acres for WUI in Idaho Roadless Areas

WUI			Condition class acres (percent of fire regime acres)		
Fire regime	Acres	Percent of area	1	2	3
FR I	320,000	30	35,800 (11)	234,200 (73)	50,000 (16)
FR II	8,400	<1	10 (<1)	4,000 (48)	4,400 (52)
FR III	234,600	22	79,800 (34)	115,000 (49)	39,800 (17)
FR IV	481,900	45	77,300 (16)	348,600 (72)	56,000 (12)
FR V	4,600	<1	2,800 (61)	1,800 (39)	0 (0)
Unclassified	31,700	3			
Total	1,081,200	100	195,700 (19)	703,600 (67)	150,200 (14)

³¹ The Idaho State Fire Plan Working Group (State Working Group) is composed of individuals representing State and Federal agencies, counties, Tribes, and non-governmental organizations. It provides the key link between national and local levels of government to implement the NFP. The State Working Group provides leadership in the development of CWPP (Idaho State Working Group 2007).

For the WUI, the most desirable type of wildland fire is one of low intensity and severity that can be safely managed with minimal effort. Changing the distribution and continuity of vegetation and fuels on the landscape, particularly in areas where fires have the potential to be stand-replacing, can also aid fire suppression efforts by providing fuel breaks or other kinds of conditions where small fires or portions of large fires can be safely suppressed (Deeming 1990, Finney 2000, Graham et al. 1999). This requires surface fuel loadings that produce low flame lengths, and vegetative conditions that reduce the chance of fire movement from the ground into the tree crowns. In the case of fire regimes I and II, and in some vegetation types that fall into fire regime III, characteristic wildland fire is of low intensity and severity. However, in other vegetation types in fire regime III, and in fire regimes IV and V, high-intensity stand-replacement fire is characteristic.

From 2001 through 2006 in Idaho, about half (51 percent) of the acres treated for hazardous fuels forest-wide were in WUI (fig. 3-3). Where treatments were conducted, mechanical methods were more often used in WUI than outside WUI (fig. 3-3); prescribed fire was used much more often outside WUI. Mechanical treatments likely are used more often in WUI because conditions can be altered more rapidly mechanically compared to prescribed fire alone. Also it may be difficult to control prescribed fire in untreated stands. Prescribed fire may be undesirable in WUI because of concerns from adjacent private property owners about risk of escape and concerns about smoke.

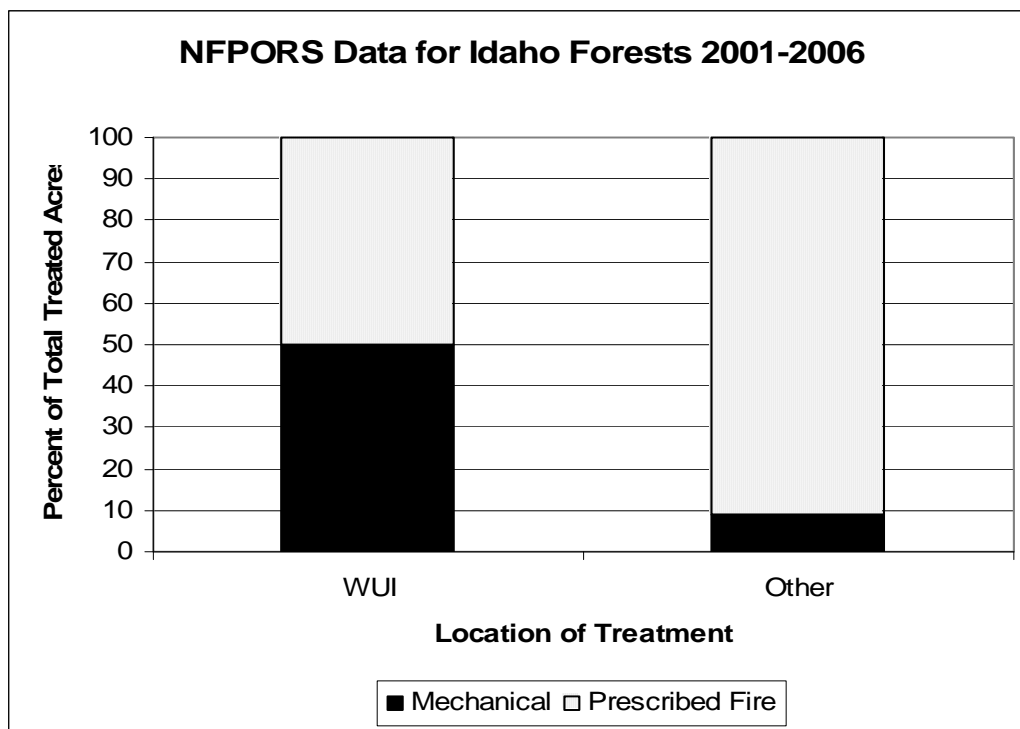


Figure 3-3. Percentage of treatment acres in WUI by type of treatment

Municipal Water Supply. About 5 percent of municipal water supplies (also called surface drinking water supplies) occur in Idaho Roadless Areas. Twenty-five percent of the acres that provide municipal water from roadless areas overlap WUI; therefore, 75 percent are in roadless areas outside WUI. Generally, high-intensity or high-severity wildfire is undesirable in areas that contribute to municipal water supplies. The HFRA encourages hazardous fuel treatment in municipal water supplies in any condition class 3, or in condition class 2 in fire regime I, II, or III. About 40 percent (172,000 acres) of the municipal watersheds in Idaho Roadless Areas are in fire regimes I, II, and III, and condition classes 2 and 3 (table 3-9).

Table 3-9. Acres of fire regime and condition class and percent of total acres for municipal water-supply areas in Idaho Roadless Areas

Municipal water-supply areas			Condition class acres (percent of fire regime acres)		
Fire regime	Acres	Percent	1	2	3
FR I	91,600	22	2,800 (3)	74,700 (82)	14,100 (15)
FR II	2,700	1	0 (0)	0 (0)	2,700 (100)
FR III	121,300	30	40,300 (33)	80,700 (66)	300 (<1)
FR IV	177,000	43	6,000 (3)	163,000 (92)	8,000 (5)
FR V	400	<1	400 (97)	10 (3)	0 (0)
Unclassified	16,100	4			
Total	409,100	100	49,500 (13)	318,400 (81)	24,500 (6)
FR=fire regime					

ENVIRONMENTAL CONSEQUENCES

All Alternatives

Wildland fires are managed using the appropriate management response (AMR) as determined after ignition. AMR can include wildland fire use for resource benefits where allowed under existing forest plans. Neither the Idaho Roadless Rule nor the 2001 Roadless Rule would affect the wildland fire use programs on any forest. Fire suppression includes a full range of options, from very resource intensive (large numbers of personnel and equipment) to less intensive activities (few personnel and minimal equipment). The AMR decision to use one or a combination of options over others depends on many factors, including threats to life, property, and investments; fuel and weather conditions; natural resource concerns; terrain; and available resources such as personnel and equipment.

There may be an effect from the alternatives as they relate to the ability to alter conditions that contribute to fire behavior, which in part affects firefighter safety and fire suppression success. In Idaho Roadless Areas this most often occurs in or adjacent to WUI or municipal watersheds because of values at risk. There is, therefore, an indirect relationship between the ability to treat priority areas and AMR.

The effect of prescribed fire would be the same across the alternatives for similar vegetation, prescriptions, topography, soils, and other factors. The same is true for

mechanical treatments such as timber cutting, chipping, masticating, and the like. Differences among the alternatives are primarily in terms of which tools (prescribed fire or prescribed fire/mechanical) are permissible; there are differences in effects between prescribed fires compared mechanical treatment, and in whether or not road construction/reconstruction is permitted. Another difference among the alternatives is the objectives for treating hazardous fuels, because this determines the outcomes of the treatments. The vegetative structure, composition, and landscape pattern that result from treatments to reduce uncharacteristic wildland fire may be different than those that result from treatments to reduce unwanted wildland fire.

Treatments for WUI protection may create conditions within a landscape that are not natural, including features such as shaded fuel breaks or areas where fuels are chipped or masticated. Such features may also include the removal of ladder fuels in vegetation types where such conditions had contributed to a natural stand-replacing fire regime; although this type of fire would be part of the natural fire regime, it would be undesirable in areas such as WUI.

Treatments in condition Class 2. Condition class 2 areas are generally easier to treat because they are not as far departed from natural conditions. Therefore, they are often less dense, have lower natural fuel loadings, and have a more diverse landscape pattern. In these areas, fewer acres may require some type of initial mechanical treatment before prescribed fire. Mechanical treatment would focus on removing ladder fuels through thinning or limbing the lower branches. In areas where mechanical treatments may be beneficial initially, there may be a lower volume of surface fuels to mitigate. In addition, prescribed fire may be more feasible as an initial treatment in some of these areas, potentially allowing more area to be treated.

Treatments in Condition Class 3. In the situations where condition class 3 occurs because of lack of past disturbance, vegetative conditions are often such that some type of mechanical treatment is desirable initially even in areas where prescribed fire would eventually be the goal. The risk can be most effectively reduced through thinning that removes ladder fuels, and natural and activity fuel abatement that reduces surface fuel loading and continuity. Ground-based systems are the most economical method for achieving this goal because fuels can be yarded off the site. Where this is not feasible but is within the reach of helicopters, fuel abatement can be a challenge where high volumes of activity fuel are created. On-site surface fuels can be difficult to mitigate, particularly with burning, in areas with deep and continuous fuel loadings. Although prescribed fire can be an effective tool for reducing hazardous fuels, applications are risky in these types of areas as well as in condition class 3 areas that have not been treated mechanically.

2001 Roadless Rule (No Action)

About 33 percent of the WUI is fire regimes I, II, or III and condition class 2; and 9 percent is in fire regimes I, II, or III and condition class 3 (table 3-10). About 42 percent

of the municipal water-supply areas in Idaho Roadless Areas is in fire regimes I, II, or III and condition classes 2 or 3.

Table 3-10. Percent of wildland–urban interface (WUI) and surface drinking water in Idaho Roadless Areas in fire regimes 1, II, or III and condition class 2 or 3, in area similar to Backcountry theme*

Wildland–urban interface (WUI)			Surface drinking water		
Percent overall	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3	Percent overall	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3
100	33	9	100	38	4
<i>WUI=wildland–urban interface; FR=fire regime</i> <i>* Similar to Backcountry: Timber cutting to reduce uncharacteristic wildfire risk permissible; road construction/reconstruction prohibited.</i>					

Under the 2001 Roadless Rule, all acres with uncharacteristic wildland fire hazard in WUI and municipal water-supply areas are available to treat with prescribed fire and mechanical tools. Many of the acres are in condition class 2 and 3; therefore, much of the area is in need of treatment to reduce the risk of uncharacteristic wildland fire. However, because road construction/reconstruction to accomplish fuels treatments is prohibited, mechanical treatments would generally occur near the limited number of existing roads. This may compromise the ability to treat condition class 3 areas because these often need an initial mechanical treatment before application of prescribed fire can be applied safely. This is particularly true in WUI, where risk of escapes of prescribed fire and smoke are a concern to adjacent property owners.

Under the 2001 Roadless Rule, hazardous fuels are defined in terms of uncharacteristic wildfire. In the non-lethal and mixed fire regimes (fire regimes I, II, and portions of III), restoring and maintaining natural vegetative conditions can reduce risks of stand-replacing wildfire. However, in lethal fire regimes, the natural vegetative conditions can still produce stand-replacing wildfire, which is often consistent with the historical fire regime but undesirable in WUI because of property values and scenic quality concerns. Therefore, restoring natural fire regimes may not reduce wildfire risk in some WUI areas. However, hazardous fuels treatments that move conditions toward natural vegetative conditions are probably more consistent with roadless area values and features.

Fuel treatments are likely to be more expensive and less efficient to implement, which would result in few acres treated based on budget projections, which suggest about 1,500 acres would be anticipated to be harvested over a 15-year period in Idaho Roadless Areas under the 2001 Roadless Rule, primarily to reduce hazardous fuels. Based on this projection, less than one-tenth of 1 percent of the high-priority areas overall would be treated, or roughly less than 1 percent of the high-priority areas in the WUI (assuming the harvest only addresses fuel treatment needs in the WUI).

The vegetative conditions that result from hazardous fuels treatments that reduce the risk of uncharacteristic wildland fire should be consistent with roadless area characteristics even though disturbance, particularly in mechanically treated areas, may be evident in the short term. Over time this should become less noticeable, particularly

in areas where activity fuels have been removed from the site or mitigated through burning. While vegetative communities that result from treatments may be more ecologically appropriate, their appearance may contrast with untreated (or undisturbed) areas. This may be particularly evident in non-lethal fire regimes where ladder fuels from conifer layers are reduced.

Existing Plans

Existing Plans generally permit prescribed fire only to be used in areas similar to the Wild Land Recreation theme. About 5 percent of the WUI is in this theme. However, only a small number of the total WUI acres are in fire regimes I, II, or III and condition class 2 in this theme (table 3-11). About 91 percent of the acres may allow for prescribed fire and mechanical tools to treat hazardous fuels, although the actual allowed area may be less depending on the Existing Plan management prescription. Road construction/reconstruction for hazardous fuels management may be allowed on about 69 percent of the roadless areas, which would facilitate a greater opportunity to accomplish hazardous fuels treatments in condition class 3 areas. However, of the area available for mechanical treatment, 22 percent would not permit road construction/reconstruction.

The actual amount of area where roads can be constructed or reconstructed may be less than estimated depending on the management prescription in Existing Plans (see appendix B). Acres in management prescriptions similar to the GFRG theme, which are 21 percent of the Idaho Roadless Areas acres (table 3-11), are most likely to permit all tools to be used. Existing Plans may not allow for all the tools to treat hazardous fuels in the management prescriptions similar to Backcountry.

Table 3-11. Percent of wildland–urban interface (WUI) and surface drinking water in Idaho Roadless Areas in fire regimes I, II or III and condition class 2 or 3; by Existing Plan theme equivalent

Wildland–urban interface (WUI)			Surface drinking water		
Percent overall	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3	Percent overall	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3
Wild Land Recreation: prescribed fire only, road construction/reconstruction prohibited					
5	2	<1	7	2	0
Primitive: Timber cutting to reduce uncharacteristic and unwanted wildfire risk generally permissible; road construction/reconstruction prohibited					
22	8	1	40	17	1
Backcountry: Timber cutting to reduce uncharacteristic and unwanted wildfire risk generally permissible; road construction/reconstruction generally permissible					
48	15	5	37	14	2
GFRG : Timber cutting to reduce uncharacteristic and unwanted wildfire risk permissible; road construction/reconstruction permissible					
21	6	2	15	5	1
Forest plan special areas: Existing Plan direction applies					
4	1	<1	1	0	0
<i>FR=fire regime; GFRG=general forest, rangeland, and grassland.</i>					

Under Existing Plans, about 42,000 acres are projected to be harvested over 15 years in Idaho Roadless Areas. It is likely that most of this harvest, even in GFRG, would be done to reduce hazardous fuels, with the focus on reducing fuels in WUI. Based on this projection, about 1 percent of the high priority areas would be treated, or about 10 percent of the high priority areas in the WUI (assuming the harvest addresses fuel treatment needs only in the WUI).

About 40 percent of the municipal water supply is in a theme similar to Primitive and about 37 percent in Backcountry. Between these two themes, about a third of the water supply acres are in condition class 2. Use of prescribed fire is more likely to be the tool of choice in these areas because of the desire to limit new roads and because there generally are more options for reducing fuels in condition class 2.

The vegetative conditions that result from hazardous fuels treatments under Existing Plans could have variable impacts on the values and features of roadless areas. Where hazardous fuels treatments are for habitat restoration or to reduce the risk of uncharacteristic wildland fire, impacts would likely retain roadless characteristics over time. The greatest change could occur in areas where hazardous fuels treatments are to reduce the risk of unwanted wildland fire. In some cases, particularly in the non-lethal fire regimes, restoring or maintaining vegetative conditions similar to the natural condition would reduce the risk of uncharacteristic as well as unwanted wildland fire effects. However, in stand-replacing (lethal) fire regimes, hazardous fuels treatments that benefit WUI may be fuel breaks or stand conditions that are not part of the natural vegetative condition. These types of treatments have a higher likelihood of changing the roadless characteristics.

Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, much of the WUI area (91 percent) is in management themes that permit prescribed fire and mechanical tools (table 3-12). Five percent is in a management theme where prescribed fire is the only tool for hazardous fuels management (Wild Land Recreation). Road construction/reconstruction is prohibited in the Primitive and SAHTS themes, but timber cutting to reduce hazardous fuels is permitted. Little timber cutting is anticipated in these areas because of lack of access. Fuel reduction would likely occur in locations near roads or in places where prescribed burning without timber cutting can occur.

Road construction/reconstruction and timber cutting would be permitted in the Backcountry theme to: (1) protect at-risk communities and municipal water supply systems from adverse effects of wildland fire; (2) reduce hazardous fuels associated with wind throw, blowdown, ice storm damage; or the existence or imminent threat of an insect and disease epidemic that is significantly threatening ecosystem component; or resource values that may contribute to significant risk of wildland fire; or (3) reduce hazardous fuels where wildland fire poses a threat to, and where natural fire regimes are important for, threatened and endangered species or their habitat. These activities are consistent with the HFRA.

Road construction/reconstruction and timber cutting to reduce hazardous fuels are permitted in the GFRG theme after the appropriate site-specific analysis is completed.

Under the Idaho Roadless Rule, hazardous fuels management in WUI would be to address unwanted and/or uncharacteristic wildland fire. A combination of prescribed fire and mechanical tools and road access would provide the most opportunity to facilitate hazardous fuels management, particularly in condition class 3 areas.

Table 3-12. Percent of wildland–urban interface (WUI) and surface drinking water in Idaho Roadless Areas in fire regimes I, II, or III and condition classes 2 or 3, by Idaho Roadless Rule theme

Wildland–urban interface (WUI)			Surface drinking water		
Percent overall	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3	Percent of surface drinking water	Percent in FR I, II, or III and condition class 2	Percent in FR I, II, or III and condition class 3
Wild Land Recreation: prescribed fire only, road construction/reconstruction prohibited					
5	2	<1	7	3	0
Primitive and SAHTS: Timber cutting to reduce uncharacteristic and unwanted wildfire risk permissible; road construction/reconstruction prohibited					
19	8	1	29	13	0
Backcountry: Timber cutting to reduce uncharacteristic and unwanted wildfire risk permissible; road construction/reconstruction permissible					
59	18	5	57	22	3
GFRG : Timber cutting to reduce uncharacteristic and unwanted wildfire risk permissible; road construction/reconstruction permissible					
12	4	2	6	2	1
Forest Plan Special Areas: Existing Plan direction applies					
4	1	<1	1	0	0
FR=fire regime; SAHTS=special areas of historic and tribal significance; GFRG=general forest, rangeland, and grassland.					

About 16,000 acres of timber harvest are projected to occur over a 15-year period in Idaho Roadless Areas. The primary purpose would be for hazardous fuel reduction, and would likely focus on treatments in the WUI or municipal watersheds. Prescribed burning would likely be the tool outside the WUI, similar to existing trends. Based on this projection, less than 1 percent of the total high-priority areas would be treated, or about 3 percent of the high-priority areas in the WUI (assuming the harvest addresses fuel treatment needs only in the WUI).

The vegetative conditions that result from hazardous fuels treatments under the Idaho Roadless Rule could have variable impacts to roadless characteristics. Hazardous fuels treatments under the Idaho Roadless Rule are to reduce the risk of unwanted wildland fire, which could include a broad range of treatments such as fuel breaks or creating stand conditions where firefighters can safely suppress fire or where the risk of stand-replacing wildland fire is reduced. However, under the Idaho Roadless Rule all treatments would be required to meet or restore one or more of the roadless characteristics.

FIRE PREVENTION

The incidence of human-caused fire ignitions (“starts”) is assumed to be higher in areas that could be roaded compared to areas that remain unroaded. This is based on the national and Idaho 1986–1996 data that showed that the number of human-caused starts was greater in roaded compared to unroaded areas.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule would have little potential impact on the fire prevention program (table 3-13) because road construction or reconstruction is restricted to limited exceptions. About 15 miles of road construction are projected to occur over 15 years under the exceptions in the 2001 Roadless Rule. Based on the limited exceptions and the limited amount of road construction projected, there is likely to be no increase in human-caused starts under the 2001 Roadless Rule.

Table 3-13. Percent of Idaho Roadless Areas that permit or prohibit road construction or reconstruction, by alternative*

Road construction/ reconstruction	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Prohibited	0	39	34
Permitted, under limited ¹ exceptions	100	0	59
Permitted, under variable ²	0	47	0
Permitted	0	14	7
Total	100	100	100

*Excludes lands in Forest plan special areas

¹Permitted under “limited” refers to the exceptions allowed in the rules.

²Permitted under “variable” refers to the variety of allowances in existing plans.

Existing Plans

For Existing Plans, about 63 percent of the management prescriptions permits road construction/reconstruction to some degree. About 180 miles of road construction/reconstruction are projected in Idaho Roadless Areas over 15 years, and almost half of this is reconstruction. The number of human-caused starts may increase in those areas where new roads are constructed, especially if they are permanent roads. This indicates there is a potential for an increase in the workload for the fire prevention program under Existing Plans. However, road decommissioning is also occurring which may offset the increase to some degree.

Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule would permit road construction/reconstruction on about 60 percent of the Idaho Roadless Areas for limited purposes and on 7 percent for any purpose. About 60 miles of road construction/reconstruction are projected to occur over a 15-year period under the Idaho Roadless Rule, and only 15 miles are anticipated to be permanent. The Idaho Roadless Rule says that when roads are to be constructed

they should be temporary in nature. Based on the limited increase in new roads open to the public and the limited amount of permanent road constructed, there is likely to be no measurable increase in human-caused starts under the Idaho Roadless Rule.

CUMULATIVE EFFECTS

Fire exclusion and lack of treatment in Idaho Roadless Areas may have contributed to the amount of area that is in condition classes 2 and 3. In the past several years, the greatest impact of wildland fires probably has been the alteration of vegetative conditions. Programmatic policy decisions such as the NFP, HFI, and HFRA have placed an emphasis on reducing unwanted and uncharacteristic wildland fires. Under the 2001 Roadless Rule there would be limited opportunity for reducing uncharacteristic wildland fires because of the inability to construct roads when necessary to treat fuels. In addition, the 2001 Roadless Rule does not address unwanted wildland fire. Under the Existing Plans and Idaho Roadless Rule, roads could be constructed in those limited situations where it would be necessary to support a fuels reduction project. Cumulatively, none of the alternatives are anticipated to make a significant difference in fire risk across all of Idaho; however, with more tools available the Existing Plans and Idaho Roadless Rule may permit opportunities in local areas. Other programmatic decisions or policies have had limited cumulative effect on fire risk or the ability to treat fuels.

Past road construction or reconstruction actions in Idaho Roadless Areas may have affected the fire prevention program. Additional road construction or reconstruction under the Existing Plans and the Idaho Roadless Rule could increase the amount of area that may be affected by human-caused wildland fires; however, more roads are being decommissioned than are constructed.

3.4 Road Construction/Reconstruction

INTRODUCTION

The following discussion provides a foundation for the analysis provided in other resource sections. The Proposed Action (Idaho Roadless Rule) prohibits or permits road construction or reconstruction depending upon the management theme; therefore, this analysis describes the amount of road construction and reconstruction projected to occur in Idaho Roadless Areas.

The Forest Service constructs, reconstructs, and maintains roads on National Forest System (NFS) lands to provide needed access for implementing forest plan goals and objectives. As these objectives and goals change, road management objectives also change. It is through road management objectives (FSM 7712.31) that design standards, maintenance levels, and traffic management requirements, such as seasonal closures, are established. As forest plan goals and objectives change, so does the need for new roads and the objectives for managing existing roads. The Forest Service manual (FSM) direction is as follows:

FSM 7712.31 - Road Management Objectives

Establish the specific intended purpose (FSM 7701, para. 7), based on management direction, of the new project or projects. Document this purpose by developing a road management objective that contains design criteria (FSM 7720) and operation and maintenance criteria (FSM 7730.3). The document shall be signed by a line officer when approved, and retained as a permanent record.

Document arterial and collector roads individually; however, similar local roads may be grouped on one document.

National Forest System roads are generally those roads that are needed to meet the goals and objectives established in forest plans and that require permanent, long-term road access. Other roads authorized by the Forest Service include public roads that provide primary road access into and through NFS lands and privately owned roads that access private lands within and adjacent to NFS lands. With the exception of private roads, these forest roads are those roads to which State traffic regulations generally apply and are designed and maintained for “highway legal” motor vehicles, although use by other classes of recreational vehicles might be permitted.

Temporary roads are authorized under contracts and permits, such as timber sale contracts, special use permits, oil and gas exploration permits, or facility construction contracts; or they may be constructed by the Forest Service for administrative access. These roads are needed for a short time to meet a one-time access need, usually for 1 year and not more than 10 years. The Forest and Rangeland Renewable Resources Planning Act of 1974 (as amended) generally requires temporary roads be closed and revegetated within 10 years after use. In general, the Forest Service decommissions temporary roads within 1 year after the need for access has terminated.

Over the past 100 years, roads have been constructed to serve a variety of purposes. Before World War II, roads were constructed on NFS lands primarily for fire and conservation activities. From 1944 until the mid to late 1980s, the majority of roads on NFS lands were constructed to support timber harvest activities. Roads are also constructed to support other uses including recreation; permits (mining, special uses); road access to private lands within or adjacent to NFS lands; and road access for cleanup purposes (restoring abandoned mines). Once roads are constructed they may need to be reconstructed or maintained.

Road reconstruction includes: (1) road improvement, which is an activity that results in an increase of an existing road's traffic service level, expands its capacity, or changes its original design function; or (2) road realignment, which is an activity that results in relocation of an existing road or portions of an existing road and treatment of the old roadway.

Road maintenance includes the ongoing upkeep of a road necessary to retain or restore the road to the approved road management objectives. Road decommissioning includes activities that result in the stabilization and restoration of unneeded roads to a more natural state.

Unauthorized roads are those roads that exist on NFS lands without the Agency's express permission. They include remnants of historical uses, such as old logging and mining roads, user-created roads resulting from repeated travel by recreational vehicles off designated roads and trails, and old temporary roads that were not decommissioned.

Roads can have both beneficial and negative effects. Beneficial effects include providing a more developed form of access for such multiple uses as timber harvest, grazing, mining, fire suppression, forest management, ecosystem restoration, research, monitoring, recreation, subsistence uses, emergency rescue, and to meet other access needs; providing easier access to private lands within and adjacent to NFS lands; and providing historical and cultural value. Non-access-related benefits include providing edge habitat and firebreaks. Properly constructed or reconstructed roads can mitigate negative effects of past roading on water quality and riparian habitats (USDA Forest Service 2000k).

Roads have known undesired and negative effects, including impacts on hydrology and geomorphic features such as debris slides; sedimentation; human-caused fire ignitions; habitat fragmentation; predation and wildlife mortality; invasion by exotic species; dispersal of pathogens; chemical contamination; and effects on some recreational experiences, water quality, soil productivity, and biodiversity (USDA Forest Service 2000r).

All management activities associated with NFS roads are required to comply with relevant State and Federal statutes such as the Clean Water Act, NEPA, and the Endangered Species Act (ESA). In addition, it is the Agency's policy to use the best available scientific information and best management practices (BMPs) for planning,

designing, constructing, and maintaining roads regardless of where the road is located. Implementation of these policies can minimize, but not eliminate, some of these adverse environmental effects.

Specific effects of road construction and reconstruction on individual resources are discussed later in this chapter. A key underlying assumption to all effects analyses are that road impacts are proportional to the miles of construction and reconstruction. Therefore, this analysis displays differences in road construction and reconstruction among alternatives.³²

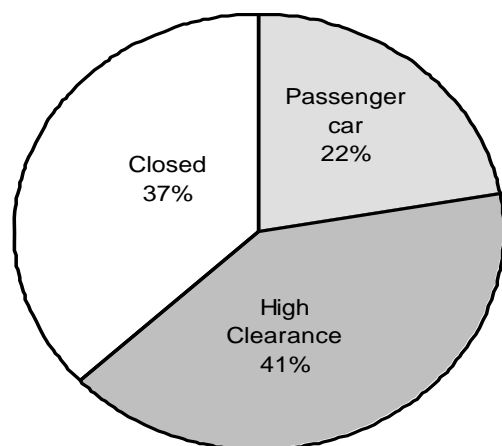
AFFECTED ENVIRONMENT

The Forest Service maintains and administers approximately 386,000 miles of roads on NFS lands, 33,800 miles of which are in the State of Idaho. NFS roads serve a wide variety of forest users and join with county, State, and national highways to connect rural communities and urban centers with NFS lands. Recreation is the single largest use or activity supported by the NFS roads, accounting for approximately 90 percent of the daily traffic. Administrative use (9 percent) and commercial use (1 percent) make up the balance (Coghlan and Sowa 1998).

Some NFS roads are designed and maintained to accommodate low-clearance passenger cars, and others are designed and maintained for high-clearance vehicles such as sport-utility vehicles, pickups, and jeeps (fig. 3-4). Within Idaho, about 7,500 miles, or 22 percent, of NFS roads are maintained for low-clearance passenger cars. Another 13,800 miles, or 41 percent, of NFS roads are designed and maintained for high-clearance vehicles. The remaining 12,500 miles, or 37 percent, are single-use roads (for example, fire access) that are generally closed after their initial use and kept closed between uses.

³² The Proposed Action does not identify what existing roads in Idaho Roadless Areas are needed or unneeded and it would not change current levels of roaded access; therefore, this EIS does not analyze these elements. In 2001, the Agency approved the Roads Policy (36 CFR §212), which provides the Forest Service direction about its transportation system. The Roads Policy gives managers a scientific process to inform their decision-making about what roads are needed and unneeded. In 2005, the Agency published a new travel management rule governing motor vehicle use on national forests and grasslands (USDA Forest Service 2005b). The Travel Management Policy requires each unit to designate roads, trails, and areas as open (or closed) to motor vehicle use by class of vehicle, and if appropriate, by time of year. No wheeled motorized use would be permitted unless it occurs on a designated route or area. Travel management decisions are made under separate travel planning processes and are ongoing for all Idaho national forests.

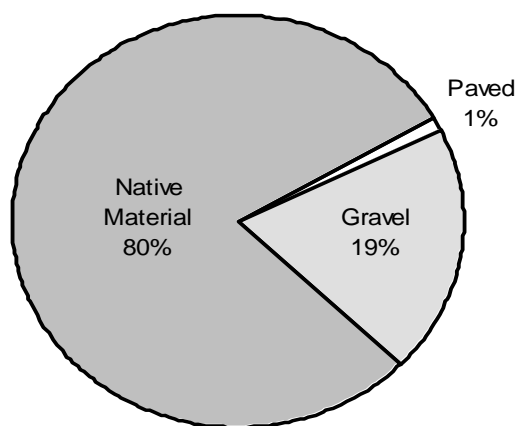
Definitions of common terminology were coordinated between Forest Service policy efforts for the 2001 Road Policy, 2005 Planning Regulations, and the 2001 Roadless Rule. However, as a result of the 2005 Travel Management Policy, the terms “unclassified road” and “classified road” are no longer being used. Updated definitions are found in the 2005 Travel Management Policy (36 CFR 212.1) and the glossary.



Road design	Miles
Passenger car	7,540
High clearance	13,760
Closed to vehicles	12,510
Total miles ^a	33,810
^a Does not include unauthorized roads.	

Figure 3-4. Types of vehicle use on NFS roads in Idaho. (USDA Forest Service 2007k)

While the Forest Service manages approximately 410 miles of paved roads in Idaho, the majority of higher standard NFS roads (6,580 miles) have gravel surfaces. About 26,820 miles are surfaced with native, on-site materials. Figure 3-5 displays the percentages of these road surfaces. Many national forest visitors travel single-lane, gravel-surfaced roads that are maintained for low-clearance passenger vehicles. An additional 10,000 miles of road are under the jurisdiction of public road agencies (State, counties) or private parties (adjacent private landowners, mining claimants) on NFS lands in Idaho (USDA Forest Service 2007k).



Road surface type	Miles
Paved	410
Gravel	6,580
Native material (dirt)	26,820
Total miles ^a	33,810
^a Does not include unauthorized roads.	

Figure 3-5. Types of road surface on NFS roads in Idaho. (USDA Forest Service 2007k)

Road maintenance activities are focused on resource protection, public health and safety considerations, and mission-related activities. Figure 3-6 shows the proportions of these annual road maintenance needs for Idaho national forests. Each new mile of NFS road competes for limited road maintenance funding. Annual maintenance on new roads costs, on average, approximately \$1,500 per mile. In fiscal year 2006, the Forest Service received less than 20 percent of the estimated funding needed to maintain its existing road infrastructure (Moore 2007).

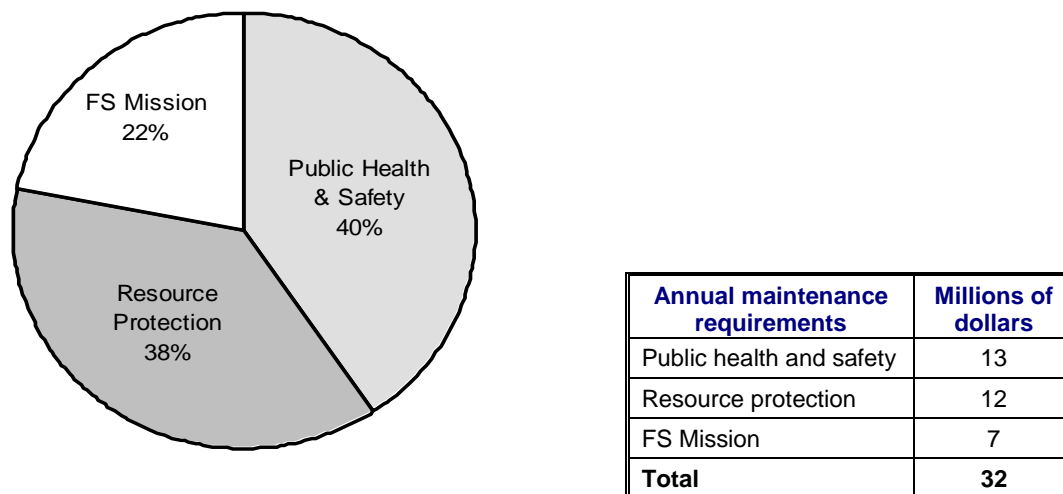


Figure 3-6. Annual road maintenance needs in Idaho. (USDA Forest Service 2007k)

The criteria used during RARE I and II permitted the presence of some roads in areas that were inventoried for wilderness consideration (USDA Forest Service 2000k). Subsequent roadless area inventories used the same criteria. Today, approximately 1,800 miles of roads currently exist on less than 5 percent of the land area in Idaho Roadless Areas (table 3-14). Some of these roads pre-date the inventories, while others have been constructed where forest plans permitted development.

These data represent “all roads” on NFS lands including forest roads, other public roads, private roads, and unauthorized roads based on the road data from December, 2006³³. The unauthorized roads include but are not limited to jammer roads,” user created routes,” and other roads that were never authorized through contract or permit.

³³ From GIS road and travel routes data. Not all datasets were of equal detail and as much data as available were used to create the dataset for this analysis.

Table 3-14. Miles of roads within Idaho Roadless Areas by national forest

Forest	Road miles
Boise	85
Caribou	260
Clearwater	15
Idaho Panhandle	60
Nez Perce	10
Payette	30
Salmon/Challis	830
Sawtooth	215
Targhee	285
Wallowa-Whitman	20
Total	1,810

Over the past decade and a half, NFS road construction in Idaho has declined by 90 percent, from a high of 1,315 miles in 1991 to 129 miles in 2006. The majority of these roads were built to support timber harvest. During the period 1991 to 1999, about 2,660 miles of road were decommissioned each year (USDA Forest Service 2000k). From 2000 to 2006, about 1,560 miles of road were decommissioned each year. More than 13 miles of road are decommissioned for every mile of new road constructed (USDA Forest Service 2006b).

In Idaho, about 50 miles of road were constructed from 2001 to 2006; 260 miles of road were reconstructed; and 1,380 miles of road were decommissioned (fig. 3-7). In Idaho, more than 30 miles of road have been decommissioned over the past 6 years for every mile of new road constructed (USDA Forest Service 2006b).

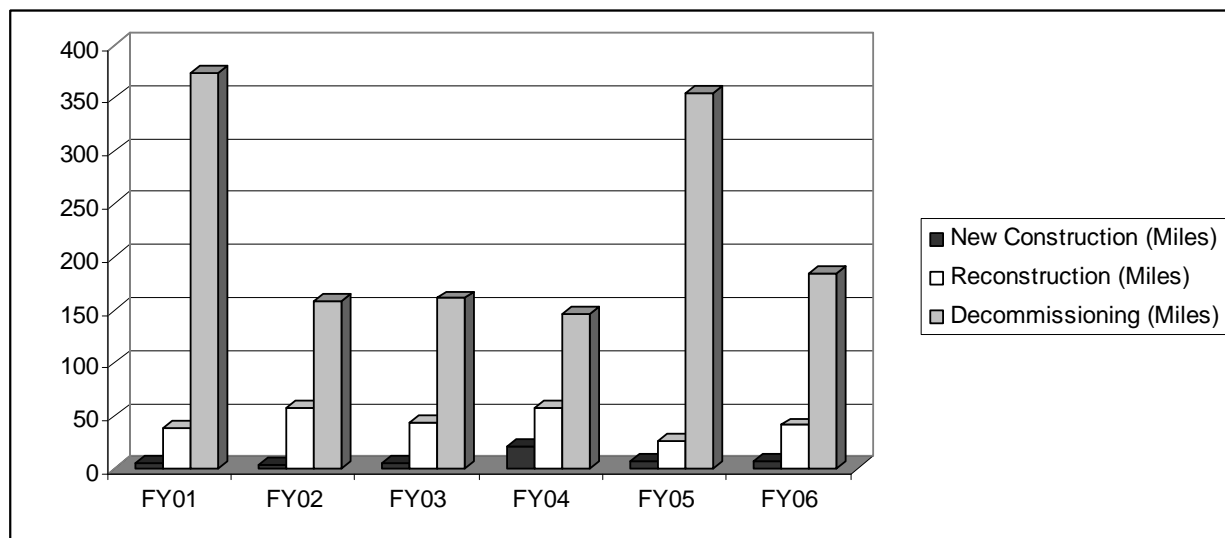


Figure 3-7. Miles of road constructed, reconstructed, and decommissioned in Idaho 2001–2006

ENVIRONMENTAL CONSEQUENCES

All Alternatives

Road construction/reconstruction likely would not see an increase in the foreseeable future (next 15 years) because the appropriated road budget is flat or declining and there is no indication this trend will change. In addition, there is a backlog of road maintenance; therefore, there is no emphasis on constructing new roads that need to be maintained. If roads need to be constructed they would likely be temporary.

Road Maintenance. None of the alternatives would restrict or limit road maintenance. In general, those activities needed to maintain a road's current design standard, maintenance level, or traffic service level would be permitted. Maintenance activities needed to meet new environmental or safety requirements resulting from law, regulation, or policy would also be permitted.

Road Decommissioning. None of the alternatives would restrict or limit road decommissioning. Road decommissioning is limited by available funding tied to timber harvest levels (timber sale contracts and stewardship contracts can help fund decommissioning) and would likely continue at recent historical trends. Any temporary roads constructed would be decommissioned after use.

Table 3-15 presents the yearly average miles of projected road construction and reconstruction by alternative.

Table 3-15. Miles of projected road construction/reconstruction by alternative, yearly average

	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Permanent–other	0.8	0.8	0.8
Temporary–other	0.2	0.2	0.2
Reconstruction–other	0.0	0.0	0.0
Total	1.0	1.0	1.0
Permanent–timber	0	4.0	0.0
Temporary–timber	0	2.0	1.5
Reconstruction–timber	0	5.0	1.5
Total	0	11.0	3.0
Grand totals	1.0	12.0	4.0
Permanent–total	0.8	4.8	0.8
Temporary–total	0.2	2.2	1.7
Reconstruction–total	0.0	5.0	1.5
Decommissioning ^a	1.0	3.2	2.7
Net change	0	8.8	1.3
^a Decommissioned miles for Existing Plans and the Idaho Roadless Rule are assumed to sum the annual construction rate for temporary roads, plus the projected rate for the 2001 Roadless Rule.			

2001 Roadless Rule (no Action)

Under the 2001 Roadless Rule, no roads would be constructed or reconstructed in support of timber cutting because that action is prohibited (table 3-14). Road construction/reconstruction is permissible for seven exceptions, primarily in relation to health and safety; for reserved or outstanding rights; or to prevent irreparable resource damage. Based on past trends and future planned actions, about 1 mile of road per year is projected to be constructed under the 2001 Roadless Rule. Over a 15-year period, about 15 miles of road are projected to be constructed, of which 12 miles would likely be permanent and 3 miles temporary. Any roads constructed or reconstructed because of the exceptions are subject to other laws, regulations, and policies governing these activities. In general, road construction or reconstruction done under one of the exceptions would be the minimum needed to meet the required short-term access need, if possible, and would be designed to minimize and mitigate impacts on the roadless character.

Prohibiting new roads for timber cutting would prevent any construction activities that would result in adding road miles in roadless areas. The prohibition on reconstruction would prevent any construction activities that would result in improving or relocating an existing road in a roadless area.

Existing Plans

Under Existing Plans, road construction/reconstruction is prohibited in management prescriptions similar to the Wildland Recreation and Primitive themes and in forest plan special areas. Road construction/reconstruction is permitted in certain situations in management prescriptions similar to the Backcountry theme and is permitted in the GFRG theme (appendix B).

Under Existing Plans about 12 miles of roads (including forest roads, public roads not under Forest Service jurisdiction, private roads, and temporary roads) per year are projected to be constructed or reconstructed under various authorities in Idaho Roadless Areas (table 3-14). Almost 90 percent of these roads would be constructed/reconstructed in support of timber cutting. Based on the average annual projections, about 180 miles of road would be constructed or reconstructed over the next 15 years under some kind of authorization. Of the 180 miles, about 72 miles of road construction would be permanent, 33 miles temporary, and 75 miles would be reconstructed.

Most of the planned timber-related roads are single-purpose roads closed to traffic between uses or are short-term (temporary) roads that would be decommissioned. Temporary roads would typically be decommissioned within 1 year after use.

Closing or decommissioning roads after use would reduce the long-term effects on the environment and roadless character. On the other hand, although temporary road construction must comply with law, regulation, and policy, in general temporary roads are not designed or constructed to the same standards as permanent roads and are not

intended to be part of the NFS transportation system. The result can be a higher risk of environmental impacts over the short run. The effects of road construction and reconstruction are described for the alternatives for each resource elsewhere in this chapter.

Idaho Roadless Rule (Proposed Action)

In the Wild Land Recreation, Primitive, and SAHTS themes, road construction/reconstruction would be prohibited, except when provided for by statute or treaty or when needed pursuant to reserved or outstanding rights or other legal duty of the United States³⁴.

In the Backcountry theme, the Idaho Roadless Rule would permit road construction/reconstruction under several exceptions. In the GFRG theme, road construction/reconstruction is permissible.

Based on these themes, and on historical and planned levels of road construction and reconstruction, about 4 miles of road (including forest roads, public roads not under Forest Service jurisdiction, private roads, and temporary roads) per year are projected to be constructed or reconstructed annually (table 3-14). Almost 75 percent of these roads would be constructed/reconstructed in support of timber cutting. Based on the average annual projections, about 60 miles of road would be constructed or reconstructed over the next 15 years under some kind of authorization. About 12 miles of road construction would be permanent and 26 miles temporary. An additional 22 miles would be reconstructed.

The Idaho Roadless Rule would permit road construction/reconstruction in the Backcountry and GFRG themes to provide road access for phosphate exploration and development. The projection of 1 mile per year of road construction/reconstruction for other uses includes roads constructed to access existing phosphate leases (table 3-14). Phosphate exploration and development has been ongoing in Idaho Roadless Areas, and several areas are currently under lease (see Minerals section).

The Idaho Roadless Rule would also permit road construction/reconstruction in the GFRG theme for any mineral or energy development. Only oil and gas and geothermal exploration are likely to occur in Idaho Roadless Areas (see Minerals section). Oil and gas are found only on the Caribou-Targhee National Forest and may be developed on the Caribou portion of the forest (see Mineral section). The Caribou is undergoing a leasing analysis that predicts four exploration wells could be drilled over the next 15 years. Six miles of road are anticipated to be needed to access these wells. The projection does not account for this road access because it is unknown if the wells would be located in GFRG within an Idaho Roadless Area.

The projection also does not account for geothermal energy development because at this time there is no trend information to reasonably predict a surge in geothermal activity.

³⁴ Other legal duty refers to obligations with other laws and regulations not expressly mentioned.

The assumption is that geothermal development would first take place where roads are already developed, generally outside Idaho Roadless Areas because of the reduced cost of development. It is probable that sometime in the future geothermal development in Idaho Roadless Areas may become economical. If and when this happens, the road development required to develop geothermal wells could be greater than the road construction/reconstruction projections based on past and current trends.

Under the Idaho Roadless Rule, new roads that are constructed must be temporary unless the responsible official determines that a permanent road meets the exceptions. Roads constructed for discretionary mineral activities must be conducted in a manner that minimizes effects on surface resources, prevents unnecessary or unreasonable surface disturbances, and complies with all applicable lease requirements, land and resource management plan direction, regulations, and laws. Roads constructed or reconstructed must be decommissioned when they are no longer needed or when the lease, contract, or permit expires, whichever is sooner.

CUMULATIVE EFFECTS

During scoping the public expressed concern about the cumulative effects of the prohibitions and permissions of road construction/reconstruction and how they may affect future access in combination with the 2001 Roads Policy and the 2005 Travel Management Policy. None of the alternatives include management direction regarding access management.

The 2001 Roads Policy is an analysis process that provides information to inform the Agency of what roads are needed and what roads may no longer be needed. The decision to keep or decommission roads is made at a later time, either through project planning or other planning efforts.

The 2005 Travel Management Policy directs the Agency to designate which roads, trails and areas will be open to motorized travel. All Idaho national forests are going through travel planning activities, including a separate public involvement process, as well as NEPA. The prohibitions in the three alternatives may limit the amount of new construction, thereby limiting any new access to roadless areas. However, based on past experience, there have been limited roads constructed in roadless areas, and those roads that have been constructed have generally been closed to motorized travel once the activity was completed. That trend likely will not change because of budgets and other priority work. None of the alternatives would have a measurable impact on access to NFS lands or on rural highway access when considered on a State or national scale because: (1) they do not include access decisions and (2) new road construction is projected to be minimal in the foreseeable future.

3.5 Minerals and Energy Resources

INTRODUCTION

A wide variety of mineral and energy resources occur in Idaho Roadless Areas. Mineral resources may be classified into three categories: locatable minerals, leasable minerals and saleable minerals. The analysis evaluates how each alternative may affect the ability to access and recover mineral resources and provides a foundation for the analysis provided in other resource sections.

Locatable minerals are generally metals (such as gold and silver) but also include rare earth elements such as uranium and special uncommon varieties of sand, stone, gravel, pumice, pumicite, and cinders. Development of such minerals is subject to the General Mining Law of 1872.

Leasable minerals are those minerals that can be explored for and developed under one of several Federal mineral leasing acts. Leasable minerals in Idaho include energy mineral resources such as oil, gas, and geothermal, as well as non-energy minerals such as phosphate. Moreover, for lands acquired or administered under the Weeks Act (PL 61-435) and the Bankhead-Jones Act (PL 75-210), the 1872 Mining Law does not apply and deposits of otherwise locatable minerals such as gold and garnet are leasable.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals generally requires excavation pits, facilities, power lines, pipelines, communication sites, and associated transportation systems. Efficient exploration and development of leasable minerals is generally not possible without the ability to build roads. In the case of oil, gas, and geothermal resources, the industry has the capability to avoid disturbing sensitive surface resources by using directional drilling techniques. However, directional drilling is unlikely to be widely used in Idaho because of economic and technological limitations such as unknown resource potential and complex geology.

The Government's decision regarding whether to lease leasable mineral resources is discretionary, meaning that leasing may or may not be allowed. The Bureau of Land Management (BLM) has the exclusive authority to dispose of leasable mineral resources on NFS lands. However, BLM may not lease oil, gas, or geothermal resources on NFS lands over the objections of the Forest Service. In the case of phosphate, BLM must seek Forest Service recommendations for measures to protect surface resources, but may lease without Forest Service consent. A Federal lease conveys to the holder the right to explore and develop the leased commodity subject to lease terms, stipulations, and applicable regulations.

Saleable minerals are common varieties of sand, stone, gravel, soil, and clay. Generally, they are widespread and of low value, used primarily for construction or landscaping materials. Their value depends on market factors, quality of the material, and availability of transportation. Disposal of these resources is at the sole discretion of the

Forest Service and is subject to the provisions of 36 CFR 228, subpart C. Under these regulations, the Forest Service may either: (1) sell material for commercial use or for personal use by the public; (2) allow free use of material for public projects by other Federal agencies or State and local governments; or (3) use material itself for Agency projects on NFS lands. The regulations also require that disturbance associated with mineral material sites is approved by the Forest Service in an operating plan that includes provisions to protect the environment and reclaim the surface in a timely manner.

Other areas discussed in this section include abandoned and inactive mines, geological and paleontological resources, and energy corridors.

LOCATABLE MINERALS: AFFECTED ENVIRONMENT

Valuable deposits of locatable mineral resources potentially exist in Idaho Roadless Areas. Of the 281 roadless areas, 102 contain an estimated 2,085 active mining claims. The number of claims within Idaho Roadless Areas constantly changes as new claims are staked and others are allowed to lapse by the claimholders.

LOCATABLE MINERALS: ENVIRONMENTAL CONSEQUENCES

All Alternatives

In the long term, it is reasonable to assume that future exploration, mining, and mineral processing activities would continue to occur in Idaho Roadless Areas where valuable deposits exist. While it is not possible to accurately predict where and when development would occur, the existence of active mining claims within a given roadless area is one indicator of where there is both potential for a valuable mineral deposit and for future mineral-related activity.

When necessary, construction or reconstruction of roads for locatable mineral exploration or development is part of the reasonable right of access provided under the General Mining Law. Therefore, none of the alternatives would affect rights of reasonable access to prospect and explore lands open to mineral entry and to develop valid claims.

All proposals for locatable mineral exploration or development are subject to the planning and design requirements governing locatable minerals in 36 CFR 228, subpart A, and the appropriate level of environmental analysis. The plan of operations would be approved subject to modifications identified in the environmental analysis and would be binding on the operator.

Under all alternatives, an estimated average of 1 mile or less per year of road construction or reconstruction is projected to occur in Idaho Roadless Areas during the next 15 years for all non-timber related activities, including mineral activities, such as access to locatable minerals and exploration within existing lease areas (see chapter 3, Assumptions and Projections). It is anticipated that should the rise in the price of metals

continue, there would be a corresponding increase in exploration activity on mining claims resulting in an increase in road construction or reconstruction within Idaho Roadless Areas.

LEASABLE MINERALS: AFFECTED ENVIRONMENT

Coal. Currently there are no existing leases or pending lease applications on NFS lands in Idaho, and no demonstrated industry interest. Consequently, no foreseeable activity (that is, in the next 15 years) is anticipated for exploration or development of coal reserves; therefore, coal will not be discussed further.

Oil and Gas. Since 1903, about 145 wells have been drilled throughout Idaho to explore for oil and gas, but not one has yet yielded a commercial discovery. With no commercial discovery, all the oil and gas leases on NFS lands in Idaho have expired and there are presently no active oil and gas leases on any national forest in Idaho.

Presently, the potential for occurrence of oil and gas is unknown to low in all Idaho national forests, with the exception of the Caribou-Targhee National Forest and the Curlew National Grassland. While there is potential for occurrence on these NFS lands, the potential for development is much less certain. This is evident in a 2003 U.S. Geological Survey's assessment of undiscovered oil and gas resources within the Wyoming Thrust province (Kirschbaum 2003). This assessment made an allocation of the potential for undiscovered oil and gas reserves for individual States within the province. Idaho, which made up 38.4 percent of the province area, was allocated none of the undiscovered oil resources, and 1 percent of the undiscovered gas resources.

In 2005, more than 200,000 acres of land on the Caribou portion of the Caribou-Targhee National Forest were nominated by the industry for oil and gas leasing. In response, the forest initiated a leasing analysis for both the national forest and the Curlew National Grasslands. The draft reasonably foreseeable development scenario being prepared for the EIS process predicts four exploratory wells would be drilled on the Caribou over the next 15 years (Robison 2007). Each well is predicted to require 6 miles of new roads to access the well pads. It is anticipated – based on the geology, the historical level of drilling activity and success rate, the near lack of infrastructure to support oil or gas development, and the lack of any historical or currently producing oil/gas wells/fields in southeast Idaho and surrounding area – that none of the four wells drilled would be capable of economic commercial production (Robison 2007).

The forest supervisor of the Targhee National Forest issued an oil and gas leasing decision in 2000 (Reese 2000). The decision made much of the forest either unavailable for leasing or available for leasing with a no surface occupancy (NSO) lease stipulation. The large expanse of the designated NSO areas renders them virtually impossible to economically explore and develop. Directional drilling could be used to explore portions of NSO leased lands adjacent to areas where surface occupancy may be allowed. However, it is not expected that the industry would incur the extra expense of directional drilling without the promise of the full economic enjoyment of the entire

lease area. This is particularly true in relatively unexplored areas such as Idaho Roadless Areas, where the complex geology and lack of known commercial production greatly increase the financial risk of drilling. No wells have been drilled in the Targhee portion of the Caribou-Targhee National Forest since the leasing decision.

Geothermal. Geothermal resources are underground reservoirs of hot water or steam created by heat from the earth. Geothermal is considered a “clean” energy source because it does not produce any greenhouse gases. Geothermal steam and hot water can reach the surface of the earth in the form of hot springs, geysers, mud pots, or steam vents. These resources also can be accessed by wells, and the heat energy can be used for generating electricity or other “direct uses,” such as dehydrating vegetables or heating greenhouses, homes, commercial buildings, and aquaculture operations. Direct uses of geothermal energy do not require the intermediate to high temperatures required for power generation.

The full extent of Idaho’s geothermal resource potential has yet to be discovered. Idaho has only recently (in 2006) experienced the construction start of its first commercial geothermal power facility on private land at Raft River. In addition to this single electrical-generating facility, Idaho also hosts 73 operating direct-use facilities at more than 40 separate resource areas in the State. This relatively limited geothermal development throughout the State has been attributed to years of low-cost hydroelectric power (Fleischmann 2006).

The Geothermal Task Force of the Western Governor’s Association estimated that Idaho has 855 megawatts (MW) of near-term economic potential resources (that is, by 2015) and 1,670 MW of long-term potential (by 2025). A megawatt is enough energy to power 300 houses. This report gives 305 MW at six identified sites and 550 MW at “other Idaho sites” that are not named in the reports. One of the six identified sites is on the Salmon National Forest and is projected to have a near-term resource capacity of 10 megawatts. Other than the resource estimate for the single site in the Salmon National Forest, there is no overall estimate of geothermal resource capacity of Idaho’s national forests or Idaho Roadless Areas (Geothermal Task Force 2006).

Historically, there was interest in geothermal leasing on national forests in Idaho in the late 1970s and early 1980s. Areas of interest included the Island Park area of the Targhee National Forest, Vulcan Hot Springs in the Boise National Forest, and Big Creek Hot Springs in the Salmon National Forest. Although some NFS lands in Idaho were leased for geothermal, the leases were never developed and eventually expired. Presently, there are no geothermal leases on NFS lands in Idaho.

Higher energy prices and new legislative incentives contained in the 2005 Energy Policy Act have renewed interest in geothermal leasing. In August 2005, Ormat Nevada Incorporated (Ormat), an active company in the geothermal power industry, filed six geothermal lease applications for 11,130 acres in the Boise National Forest, which includes 7,000 acres of the Peace Rock Roadless Area. Ormat also filed another three

geothermal lease applications for 5,600 acres in the Salmon National Forest, which includes about 33 acres of the West Panther Creek Roadless Area.

The BLM and Forest Service have initiated a national programmatic EIS for geothermal development to assist in geothermal leasing and permitting on BLM public lands and NFS lands. The draft programmatic EIS is tentatively scheduled for release in December 2007. When completed, the EIS will help the Forest Service decide whether or not to allow BLM to lease lands with medium to high geothermal potential, including the lands contained in the Boise and the Salmon-Challis National Forest applications. None of the Idaho forests have a current leasing decision for geothermal resources (US Department of Energy [USDE], USDI BLM, USDA Forest Service 2005).

A regional geothermal resource assessment produced by the Southern Methodist University (SMU) Geothermal Heat Laboratory (Southern Methodist University 2004) was used in this analysis to identify the geothermal resource potential of Idaho Roadless Areas. This 2002 assessment was used because it is broad enough to provide coverage for all of Idaho. The SMU report produced a qualitative composite of information on heat flow, thermal gradient, sediment thickness, and hot springs. Based on these variables, the assessment produced digital map coverage of broad areas of geothermal resources and rated these resources as having high, medium, or low development potential. The SMU assessment does not include information on specifically where, what kind, or how much actual geothermal development would occur within these areas. Figure 3-8 shows the extent of the high, medium, and low areas of geothermal potential in Idaho.

The SMU map is probably an optimistic projection of Idaho's geothermal potential because it is based on a qualitative composite, covering broad expanses of land. Another estimate of Idaho's geothermal potential can be found on the Idaho Department of Water Resources website at www.idahogeothermal.org. Other maps can be viewed at www.eere.energy.gov/geothermal/geomap.html and www.smu.edu/geothermal/2004NAMap/2004NAmap.htm. Although these maps are helpful in identifying where there is geothermal potential, there has not been any history of geothermal activities on NFS lands to predict specifically where, what kind, or how much actual geothermal development would occur within the areas of potential. Table 3-16 summarizes the acreage of geothermal potential from the SMU report for both Idaho Roadless Areas and non-roadless area NFS lands in Idaho.

Table 3-16. Acreage of geothermal resource potential on NFS lands in Idaho

Geothermal resource potential	High	Medium	Low	Total
Inside Idaho Roadless Areas	4,837,400	3,960,900	505,400	9,303,700
Outside Idaho Roadless Areas	5,370,800	5,389,200	1,436,300	12,196,300
Total NFS lands	10,208,200	9,350,100	1,941,700	21,500,000

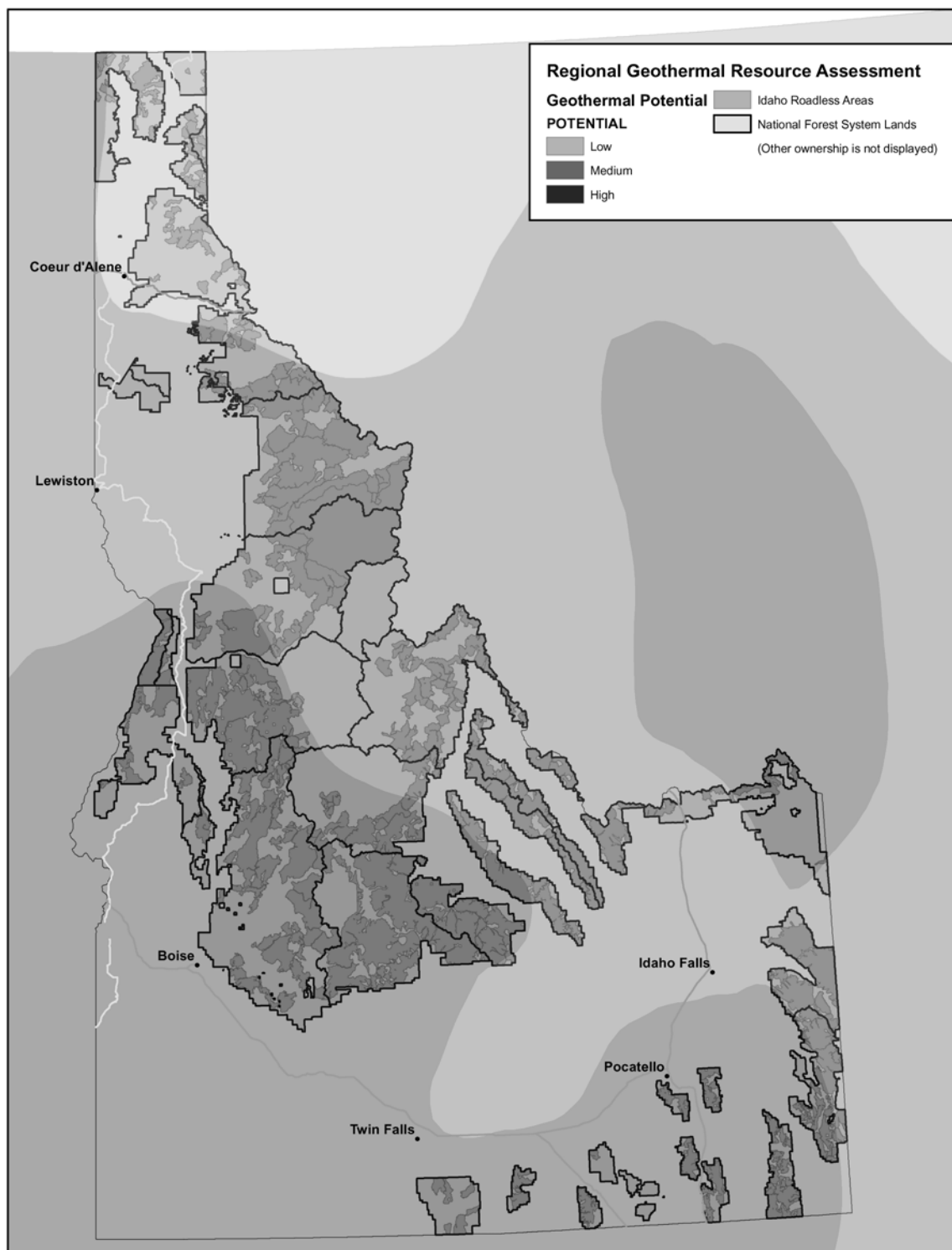


Figure 3-8. Overlap of Idaho Roadless Areas and geothermal potential

Phosphate. The Caribou-Targhee National Forest contains significant deposits of economically recoverable phosphate that is used primarily in the production of fertilizers. Idaho phosphate production is a significant national resource, representing about 15 percent of total U.S. production in 2001. Revenues from phosphate-related activity in Caribou County, Idaho, on Federal leases for fiscal year 2001 were almost \$9.34 million, about 90 percent of which was generated from the national forest (USDA Forest Service 2003).

The Targhee portion of the Caribou-Targhee National Forest currently has three active phosphate leases issued in the mid-1950s, totaling 1,690 leased acres. Of this leased acreage, about 1,100 acres are within the Mt. Jefferson Roadless Area. Some mining occurred shortly thereafter on leased portions outside and adjacent to the roadless area. There has been no phosphate activity in the area since that time and none is expected in the foreseeable future.

Currently, the Caribou portion of the Caribou-Targhee National Forest has 49 active phosphate leases affecting 27,500 acres of NFS lands. Of these active leases, approximately 8,000 acres are within six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) (table 3-17 and fig. 9). Some of these leased lands have already been mined; however the exact amount is not available due to the lack of GIS information for previously mined areas. All the leased lands within roadless areas were issued prior to the effective date of the 2001 Roadless Rule. It is a common occurrence for existing leases to be modified to prevent the bypass or waste of mineable phosphate reserves that become evident as mining advances.

Table 3-17. Idaho Roadless Areas potentially affected by phosphate mining

Idaho Roadless Area	Acres under existing lease (leased acres w/in a KPLA) ¹	Percentage affected by existing leases	KPLA acres with potential to be leased ²	Percentage affected by potential KPLA future leases	KPLA location
Dry Ridge	1,400 (1,300)	6	800	3	Eastern edge
Huckleberry Basin	3,200 (2,800)	16	1,400	7	Northwest edge
Meade Peak	500 (500)	1	2,500	6	Northeast edge
Sage Creek	2,700 (2,600)	21	1,700	13	Southern portion
Schmid Peak	40 (40)	<1	20	<1	Eastern edge
Stump Creek	160 (120)	<1	120	<1	Southern edge
Bald Mountain	0 (0)	0	1,400	8	Northeast edge
Bear Creek	0 (0)	0	5,100	5	Northeast edge
Poker Creek	0 (0)	0	400	2	Northeast edge
Mount Jefferson	1,100 (0)	2	0	0	
Totals	9,100 (7,400)		13,440		

¹ Not all existing lease acres are within a KPLA (known phosphate lease area).

² Estimated acres do not include ½-mile buffer added to the Caribou's KPLAs to allow for additional facilities needed for exploration and/or mine operations if lease is approved.

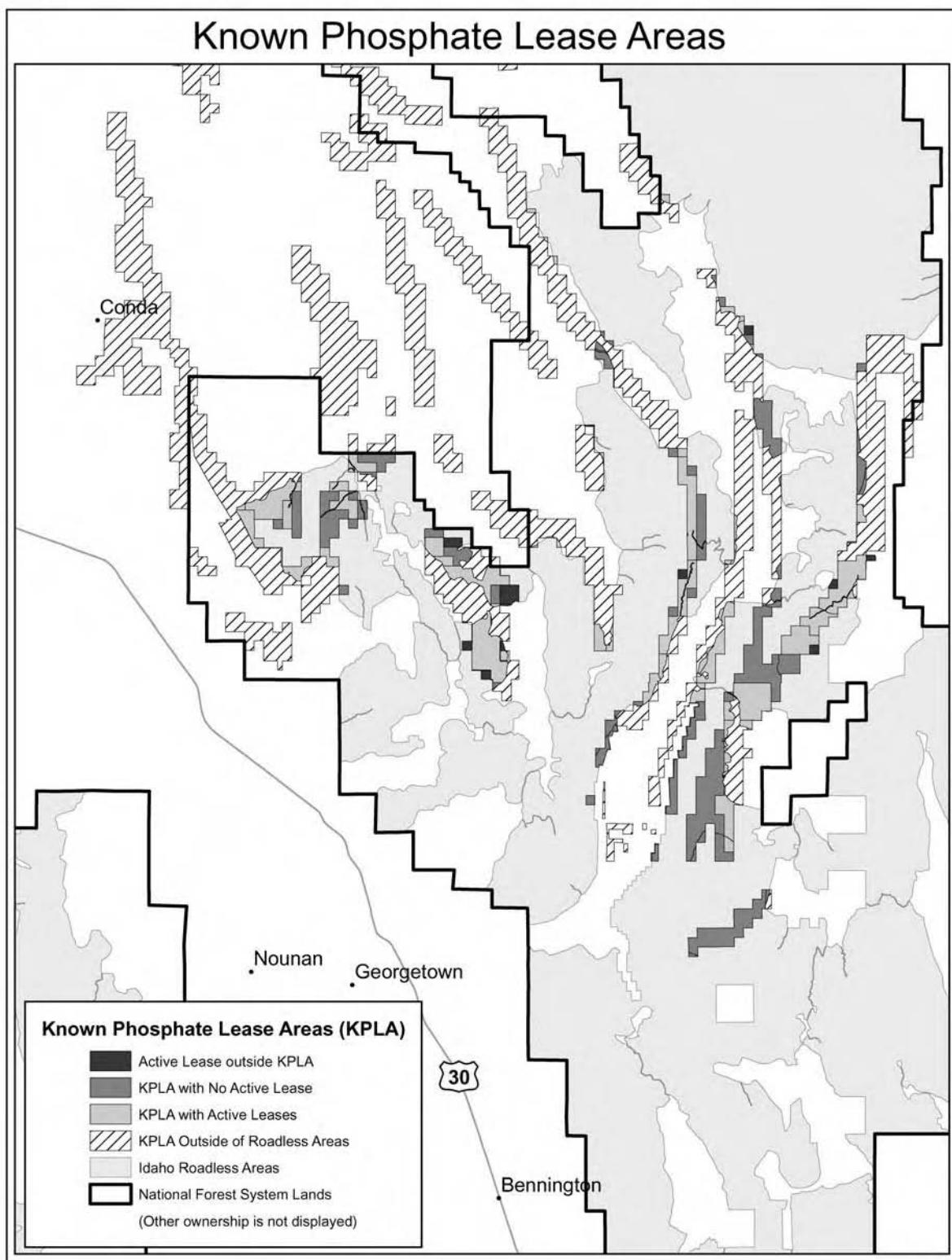


Figure 3-9. Overlap of Idaho Roadless Areas and existing phosphate leases and known phosphate deposits.

In addition, 13,400 acres of phosphate deposits within Idaho Roadless Areas are unleased and are located within known phosphate lease areas (KPLAs), a U.S. Geological Survey designation to identify lands known to contain phosphate deposits (fig. 9). Table 3-16 summarizes the acreage of KPLAs within roadless areas on the Caribou-Targhee National Forest. The phosphate deposits generally exist on the edges of the roadless area, which would leave the core of the roadless area intact should mining occur.

Phosphate is currently being surface mined from two mines located on the Caribou portion of the forest, the Dry Valley Mine and the Smoky Canyon Mine. Operations at a third mine on the Caribou, the North Rasmussen Ridge Mine, have been temporarily suspended but are expected to resume within the next 3 years. The Dry Valley Mine and the North Rasmussen Ridge Mine are not operating near roadless areas and would not be affecting roadless areas for the foreseeable future (J. Cundick 2007 pers. comm.). Although the Smokey Canyon Mine currently is not operating within a roadless area, it is the only projected phosphate mine to operate within roadless area over the next 15 years.

An EIS is in progress for a proposed expansion of the Smoky Canyon Mine (USDI BLM, USDA Forest Service, 2006 and 2007). The Smoky Canyon expansion proposes to mine about 2 million tons of phosphate ore per year from 2,080 acres of leased lands. The proposed mine plan would disturb 1,040 acres of surface in the Sage Creek Roadless Area and 60 acres in the Meade Peak Roadless Area. About 320 acres of the total surface disturbance within the roadless areas is proposed to occur off of existing lease holdings or on proposed lease modifications.³⁵

Over the 16-year life of the project, the Smoky Canyon Mine expansion would construct about 5 miles of main haul within the roadless areas, disturbing about 120 acres. With an operating width of 100 feet, main haul roads require an overall disturbance with of 100 to 500 feet, depending on terrain. In addition to the main haul road, 980 acres of disturbance would occur with the two affected roadless areas as the surface mine, soil and overburden storage piles, settling ponds, ditches, and power lines are developed.

As the surface mine advances, it follows the long, linear surface outcrop pattern of the phosphate deposits. Fully developed, the active pit area would be several hundred feet wide and 200–400 feet deep (fig. 3-10). The mining operation continues along the trend of the deposit, backfilling and reclaiming the pit as the ore is removed (fig. 3-11). The mine would be a 24-hours-per-day operation as the overburden and ore are drilled, blasted, loaded, and hauled using a shovel-and-truck fleet. All surface disturbances would be reclaimed after the project is completed with the exception of about 70 acres (steep pit walls and a section of road that would be left for future use). An average of about 70 acres of the roadless areas would be of disturbed per year (1,100 acres/16 years).

³⁵ There are about 520 acres with the proposed Smokey Canyon lease modifications, but only 320 acres would have surface disturbance.

In addition to the Smokey Canyon Mine, there are about 3,700 acres of pending lease modifications, prospecting permits, and exploration license applications in the Caribou-Targhee National Forest. Given a history of phosphate deposits being leased outside of KPLA boundaries (table 3-16); it is assumed that the Caribou has additional roadless areas outside KPLAs with phosphate potential. Lands outside of KPLAs would need further exploration to determine their leasing potential.



Figure 3-10. Open pit



Figure 3-11. Reclaimed pit

LEASABLE MINERALS: ENVIRONMENTAL CONSEQUENCES

All Alternatives

Phosphate. None of the alternatives would prohibit road construction or reconstruction associated with developing existing leases on the Caribou-Targhee National Forest or the continuation, extension, or renewal of these leases.

Consequently, the 1,100 acres of reasonably foreseeable road construction and mining disturbance associated with developing existing leases at the proposed Smoky Canyon Mine expansion is expected to occur within Sage Creek and Meade Peak Roadless Areas under all alternatives³⁶. This development is likely to occur over the next 15 years.

Projecting beyond the Smoky Canyon Mine expansion, it is reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres, within seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) would also be mined. Using the Smoky Canyon expansion as an example of the level of expected activity, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas³⁷. This disturbance would spread out over an extremely long period of time (50 or more years) as mines are eventually permitted and developed.

2001 Roadless Rule

The 2001 Roadless Rule did not prohibit mineral leasing in Idaho Roadless Areas but did prohibit the construction or reconstruction of roads associated with leases issued after January 12, 2001, the date the rule was published. Proposals for exploration or development of leasable minerals using existing roads or not requiring construction or reconstruction of roads within Idaho Roadless Areas were not affected. Prohibition of road construction or reconstruction in roadless areas would factor into the analysis of lands available for lease when leasing decisions are made.

Oil and Gas. The Caribou-Targhee National Forest is the only forest in Idaho with potential for oil and gas activity in the foreseeable future (next 15 years). There are no existing oil and gas leases in Idaho Roadless Areas.

The Targhee portion of the Caribou-Targhee National Forest issued a decision in 2000 that either precludes development or places a NSO stipulation on the roadless areas on the Targhee; therefore, the 2001 Roadless Rule would have no effect on the oil and gas leasing decision already in place on the Targhee.

³⁶ This projection assumes that the 320 acres of disturbance associated with the proposed lease modification is determined to be consistent with the 2001 Roadless Rule.

³⁷ This estimate of disturbance is likely overstated because it does not account for existing leased area that has already been mined.

The 2001 Roadless Rule could preclude oil and gas development in roadless areas on the Caribou portion of the Caribou-Targhee National Forest. It is expected there would be no commercial interest in oil and gas leasing in roadless areas because the 2001 Roadless Rule prohibits road construction/reconstruction to access new leases. This expectation is based on recent action taken by oil and gas lessees in Utah's Uinta National Forest. Upon learning that their leases would be subject to the reinstated 2001 Roadless Rule, these lessees requested that BLM suspend their leases, asserting that they were "prevented from operating on the leases."

If the four exploratory wells projected in the draft reasonably foreseeable development scenario require new road construction or reconstruction, they would have to be located outside roadless areas. However, based on the U.S. Geological Survey's assessment that there is low potential for undiscovered resources in southeast Idaho, the impacts on oil and gas exploration and development would be minimal.

Geothermal. There are no existing geothermal leases on Idaho Roadless Areas. Therefore, there would be no new roads developed under the specific exemption in the 2001 Roadless Rule for that purpose. Any new leases issued would be subject to the 2001 Roadless Rule road prohibitions. Assuming the density of existing roads within roadless areas is not adequate to explore and develop geothermal resources, it is expected there would be no commercial interest in geothermal leasing. This expectation is based on the reaction of Utah oil and gas lessees, who requested a suspension of their leases upon learning that their leases were subject to the roadless rule provisions, claiming they were prevented from operating on their leases.

Exploration methods used for geothermal are similar to those used for oil and gas. Consequently, no development of geothermal resource potential is expected on the 9.3 million acres of Idaho Roadless Areas. About 10.6 million acres of NFS lands outside Idaho Roadless Areas with high to moderate geothermal potential may be available for exploration and development, depending on the existing plan direction (table 3-16). The impact on the recovery of geothermal resources cannot be quantified because there is no specific resource estimate from which to draw.

Phosphate. Under the 2001 Roadless Rule, there would be no new road construction or reconstruction within Idaho Roadless Areas on the 13,400 acres of known unleased deposits on the Caribou-Targhee National Forest. This assumes BLM would issue any new leases with a stipulation that would subject the lease to the 2001 Roadless Rule prohibitions; therefore, it is expected there would be no commercial interest in new phosphate leasing within roadless areas. Accordingly, the phosphate deposits on this acreage would not be mined because roads could not be built to support advance drilling needed to specifically define the mineable deposit.

Although the inability of industry to lease and mine recoverable reserves from these lands would not be a near-term impact, for the long term this alternative would forego the recovery of an estimated 603 million tons of phosphate resource. This estimate assumed an average of 45,000 tons of recoverable phosphate ore from each acre mined,

and applied this average to the entire 13,400 unleased acres. This recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

In addition to unleased lands associated with known deposits, undiscovered phosphate deposits may exist within other portions of Idaho Roadless Areas. It is unlikely these potential resources would be explored to determine if economic reserves exist since no new roads could be constructed to access new drill sites.

Existing Plans

Management of leasable mineral resources in Idaho Roadless Areas would be guided by Existing Plans. If one doesn't already exist, environmental impact statements are usually prepared on a forest-wide basis to address leasing decisions. Areas with management prescriptions to protect roadless area values either may not be leased, may be leased with a NSO stipulation, or may generate a forest plan amendment. Areas with management prescriptions that allow road construction or reconstruction may be leased subject to standard lease terms and any other supplemental stipulations deemed appropriate and necessary by the Forest Service.

Oil and Gas. The Caribou-Targhee National Forest is the only forest with potential for oil and gas activity in the foreseeable future (next 15 years). The Targhee portion of the forest issued a decision in 2000 that either precludes leasing or places a NSO stipulation on the roadless areas on the Targhee. Without either a lease or the ability to occupy the surface, no oil and gas wells could be constructed within roadless areas on the Targhee.

The Caribou portion of the forest is conducting an analysis to decide which NFS lands would be made available for leasing and under what terms and conditions (USDA Forest Service, USDI BLM 2006). Under the Existing Plan management prescriptions, road construction is permissible on approximately 89,000 acres of the 741,700 acres in roadless areas. It is expected there would be no commercial interest in leasing the remainder of the Caribou's roadless areas because experience elsewhere has shown that the industry generally believes leases cannot be developed without the ability to construct roads. Therefore, any exploratory wells would be located within the 450,200 acres of lands outside roadless areas and in roadless areas where road construction is permitted. With the low potential for recoverable oil and gas reserves in southeast Idaho, the availability of only a small portion of roadless areas for road construction/reconstruction should have minimal impact on the development of oil and gas resources.

Geothermal. Without any trend data for geothermal exploration and development activities on NFS lands in Idaho, it is too speculative to predict the amount of new road construction/reconstruction that would occur in Idaho Roadless Areas under Existing Plans. Some level of exploration and development may occur if road construction or reconstruction is not prohibited under a specific forest plan prescription and if surface

occupancy is permitted. Table 3-18 provides a summary of Idaho Roadless Areas acreage by geothermal resource potential and forest plan prescriptions grouped into equivalent State management themes. The impact on the recovery of geothermal resources cannot be quantified for any of the themes discussed here because there is no specific resource estimate from which to draw.

Table 3-18. Acres of Idaho Roadless Areas by Existing Plan theme equivalent and geothermal resource potential

Existing Plan theme equivalent	Acres of geothermal resource potential			
	High	Medium	Low	Total
Wild Land Recreation	824,000	460,900	35,900	1,320,800
Primitive	1,507,700	454,800	169,300	2,131,800
Backcountry	1,932,600	2,116,600	195,900	4,245,100
GFRG	387,300	796,600	77,800	1,261,700
Forest plan special areas	185,800	132,500	26,500	344,800
	4,837,400	3,961,400	505,400	9,304,200

None of the forests in Idaho have a current leasing decision for geothermal, which would need to be completed before lands could be offered. Leasing decisions would take into account roads standards for respective forest plan prescriptions and identify other required lease stipulations to protect surface resources. One such stipulation would likely be no surface occupancy on slopes steeper than 40 percent. Table 3-19 shows the Idaho Roadless Areas acreage where surface occupancy or road building would be allowed because slopes are less than 40 percent. About 50 percent of Idaho Roadless Areas are less than 40 percent slope.

Table 3-19. Acres of Idaho Roadless Areas by Existing Plan theme equivalent and geothermal resource potential with slopes less than 40 percent¹

Existing Plan theme equivalent	Acres of geothermal resource potential with slopes less than 40 percent			
	High	Medium	Low	Total
Wild Land Recreation	304,700	204,000	15,100	523,800
Primitive	692,500	205,000	64,700	962,200
Backcountry	1,095,500	1,050,600	87,400	2,233,500
GFRG	249,500	457,700	30,500	737,700
Forest plan special areas	90,900	61,900	12,200	165,000
	2,433,100	1,979,200	209,900	4,622,200

¹Based on overlay of the SMU map with the Existing Plan themes

Geothermal resources under the forest plan management prescriptions similar to Wild Land Recreation, Primitive, and forest plan special areas are not expected to be developed because of prohibitions on road construction or reconstruction. This expectation is based on the experience with certain oil and gas lessees in Utah who believe they cannot develop a lease without the ability to construct new roads. The methods used to explore for geothermal are similar to those used in oil and gas. Furthermore, the density of existing roads is probably not adequate to explore and

develop the geothermal resource in these areas. It is also likely that in large portions of these areas, surface occupancy would not be allowed to avoid steep slopes and to protect other sensitive surface resources, further supporting the prediction that no development would occur. These areas constitute about 40 percent of Idaho Roadless Areas.

Under the forest plan management prescriptions similar to the Backcountry theme, road construction or reconstruction would be permissible only under limited circumstances on some of the lands and precluded completely on other portions. Some forest plans — such as the Boise, Payette, and Sawtooth — preclude road construction or reconstruction for new leases (see appendix B). On those lands where new or reconstructed roads are precluded, there would not likely be any geothermal leasing or associated activities. Given that road construction or reconstruction could occur in at least some of the Backcountry lands, there is potential that some level of geothermal activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). The Backcountry theme contains a substantial amount (46 percent) of the roadless areas with geothermal potential, with the majority being high and medium potential. About 24 percent of Idaho Roadless Areas in the Backcountry theme have slopes less than 40 percent and could have some potential for development (table 3-19), provided road construction or reconstruction is permitted.

Management prescriptions in Existing Plans similar to the GFRG theme would permit road construction or reconstruction to access mineral leases. The amount of activity would be relative to the amount of land available. GFRG lands constitute 16 percent of the total roadless areas in the State. About 8 percent of Idaho Roadless Areas in GFRG have slopes less than 40 percent (table 3-19). These lands have potential to host some level of geothermal activities because of the open access. Any future exploration or development would undergo separate environmental analysis. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources).

Currently lease applications have been submitted for geothermal development, which could affect 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Lands in the Peace Rock Roadless Area are in management prescriptions similar to Backcountry, and lands in the West Panther Roadless Area are in management prescriptions similar to GFRG. These areas could be made available for leasing depending on the outcome of the pending leasing decision; development as described in appendix I could then occur.

Phosphate. The existing Caribou Forest Plan, covering the Caribou portion of the Caribou-Targhee National Forest, permits leasing of the estimated 6,500 acres of unleased known phosphate lease areas (KPLAs) and/or other possible roadless areas that contain undiscovered phosphate resources. Unleased KPLAs in the forest plan

have a dual management prescription. In addition to the variety of prescriptions that apply to the unleased KPLAs, the forest plan recognizes these lands as having potential to be leased for phosphate exploration and possible mining. If leases are issued, the lands are then managed under the prescription for active phosphate mines. The prescription includes a half-mile buffer around the KPLA to accommodate support facilities or developments, including lease modifications that could be needed for mine activities. If phosphate leases are approved, they would be allowed reasonable access when future exploration drilling and mining is permitted. Reasonable access in these instances could include road construction or reconstruction within additional areas outside of the half-mile buffer around KPLAs. Using the Smoky Canyon expansion as an example of the level of expected activity, roughly 70 percent of the total amount of haul road construction necessary for a given mining project would ultimately take place within the half-mile buffer round KPLAs and in roadless areas.

The 6,900 acres of unleased KPLA in the Targhee portion of the Caribou-Targhee National Forest would have to undergo a separate NEPA analysis in order to determine how much of the 6,900 acres of KPLA could actually be leased.

There is expected to be little or no demand for unleased KPLA acreage within roadless areas for the foreseeable future because of the amount of reserves the industry already has under lease. However, in the long term (50 or more years) it is reasonable to assume that all 13,400 acres of unleased KPLA within Idaho Roadless Areas contain mineable reserves and would eventually be leased. If this should occur, roads, pits, and other surface mining facilities would be expected to be constructed within these roadless areas. This disturbance would spread out over an extremely long period of time (50 or more years) as mines are developed. If the unleased KPLAs are leased, there would be a potential to incrementally affect the forest's roadless area acreage by less than one percent.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, the Forest Service would not recommend, authorize, or consent to road construction/reconstruction for new mineral or energy leases in Idaho Roadless Areas managed under the Wild Land Recreation, Primitive, and SAHTS themes. These areas constitute 3,103,500 acres, or 33 percent of the total roadless area acreage in the State. The Idaho Roadless Rule would also not recommend, authorize or consent to authorize surface occupancy in the Wild Land Recreation, Primitive, and SAHTS themes.

The Idaho Roadless Rule also would prohibit road construction/reconstruction in the Backcountry theme, except as associated with phosphate leasing. Surface occupancy without road construction/reconstruction would be permissible for all mineral leasing. The rule would permit both surface occupancy and road construction/reconstruction for phosphate resources in the Backcountry theme.

The GFRG theme would permit both surface occupancy and road construction or reconstruction for all leasable mineral activities.

Oil and Gas. The Caribou-Targhee National Forest is the only forest, in Idaho with potential for oil and gas activity in the foreseeable future (next 15 years). The Targhee portion of the forest issued a decision in 2000 that either precludes leasing or places a NSO stipulation on any leases issued within the roadless areas on the Targhee. Without either a lease or the ability to occupy the surface, no oil and gas wells could be constructed within roadless areas on the Targhee. Without a lease, industry would have no authority to locate upon or drill wells to explore for oil and gas. An NSO stipulation means a lessee could not construct surface locations for wells on the lease. Directional drilling could be used to explore portions of NSO leases adjacent to areas where surface occupancy may be permitted. However, the large expanse of the Targhee's NSO areas renders them virtually impossible to economically explore and develop entirely via directional drilling methods. It is not expected that the industry would incur the extra expense of any directional drilling without the promise of the full economic enjoyment of the entire lease area. This is particularly true in relatively unexplored areas such as Idaho's roadless areas, where complex geology and no known commercial production greatly increase the financial risk of drilling.

The Idaho Roadless Rule prohibits surface occupancy and road construction or reconstruction for oil and gas within the Wild Land Recreation (42,100 acres) or Primitive theme (44,400 acres) found on the Caribou portion of the Caribou-Targhee National Forest³⁸. Similar to the previous discussion regarding the impact of the Targhee leasing decision, these prohibitions would preclude exploration and development of oil and gas resources in these areas because the large expanse of these areas would make it virtually impossible to develop the resource without occupying the site.

The Idaho Roadless Rule would permit surface occupancy within the Backcountry theme but prohibits road construction or reconstruction for oil and gas resources (371,700 acres). Despite the ability to occupy the surface, it is expected there would be no commercial interest in leasing lands under this theme because of the road prohibition. This expectation is based on the recent experience with certain oil and gas lessees in Utah who requested BLM to suspend the terms of their leases in roadless areas because they stated they could not develop the leases without the ability to construct new roads.

The Idaho Roadless Rule would permit surface occupancy and road construction or reconstruction for oil and gas exploration and development within roadless areas managed under the GFRG theme (251,800 acres). All but two of the roadless areas on the Caribou portion of the Caribou-Targhee National Forest have GFRG. Oil and gas

³⁸ Oil and gas surface occupancy and road construction/reconstruction are also prohibited in the SAHTS theme; however, this theme does not apply to roadless areas on the Caribou portion of the Caribou-Targhee National Forest.

development would likely occur on lands in GFRG within roadless areas, or the 450,200 acres of non-roadless lands. Given the low potential for recoverable oil and gas reserves in southeast Idaho, the impact on recovery of oil and gas resources under the Idaho Roadless Rule would also be low.

Geothermal.— Table 3-20 identifies the acres of Idaho Roadless Areas allocated by resource potential and Idaho Roadless Rule theme. Geothermal resources under the Wild Land Recreation, Primitive, and SAHTS themes, as well as forest plan special areas, would not be developed because no surface occupancy and no new roads are permitted.

The Idaho Roadless Rule would permit surface occupancy within the Backcountry theme but prohibits road construction or reconstruction for geothermal resources. Despite the ability to occupy the surface, it is expected there would be no commercial interest in leasing lands under this theme because of the road prohibition, for reasons similar to oil and gas. Thus, 93 percent of the Idaho Roadless Areas would not experience any activity to develop geothermal resources. NSO means a lessee could not construct surface locations for wells on any leases issued. Directional drilling could be used to explore portions of NSO leases adjacent to areas where surface occupancy may be permissible. However, the large expanse of the involved roadless areas renders them virtually impossible to economically explore and develop entirely via directional drilling methods. It is not expected that the industry would incur the extra expense of any directional drilling without the promise of the full economic enjoyment of the entire lease area. This is particularly true in relatively unexplored areas such as Idaho's roadless areas, where complex geology and lack of known commercial production greatly increase the financial risk of drilling.

Table 3-20. Acres of Idaho Roadless Areas by Idaho Roadless Rule theme and geothermal resource potential

Idaho Roadless Rule theme	Acres of geothermal resource potential			Total
	High	Medium	Low	
Wild Land Recreation	859,500	476,400	42,900	1,378,800
Primitive	1,376,000	269,800	10,700	1,656,500
Backcountry	2,064,500	2,777,600	404,700	5,246,800
GFRG	351,600	236,500	20,400	608,500
SAHTS1	0	68,700		68,700
Forest plan special areas	185,800	132,600	26,500	344,900
	4,837,400	3,961,600	505,200	9,304,200

Under the Idaho Roadless Rule, geothermal activity on lands in the GFRG theme would be permitted to occupy the surface and to construct or reconstruct roads. GFRG lands constitute 7 percent of Idaho Roadless Areas, with the majority having high to medium resource potential. As discussed earlier, the Forest Service would perform a leasing analysis prior to leasing geothermal resources. One specific lease stipulation that is commonly required to be made a part of any issued leases is that no surface occupancy be allowed on slopes that are 40 percent or greater. As shown in table 3-21, about 63

percent of Idaho Roadless Areas in the GFRG theme have slopes that are less than 40 percent and could be developed for geothermal. It is reasonable to expect that lands in the GFRG theme would experience some level of road construction or reconstruction to support geothermal activities sometime in the future.

Table 3-21: Acres of Idaho Roadless Areas by Idaho Roadless Rule theme and geothermal resource potential with slopes less than 40 percent

Idaho Roadless Rule theme	Acres of geothermal resource potential with slopes less than 40 percent			
	High	Medium	Low	Total
Wild Land Recreation	318,100	218,800	15,800	552,700
Primitive	619,900	138,100	4,800	762,800
Backcountry	1,170,700	1,378,100	168,400	2,717,200
GFRG	233,600	140,800	8,500	382,900
SAHTS	0	41,600	0	41,600
Forest plan special areas	90,900	61,900	12,200	165,000
Total	2,433,200	1,979,300	209,700	4,622,200

Currently lease applications have been submitted for geothermal development including 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Lands in both roadless areas are in the Backcountry theme under the Idaho Roadless Rule. Geothermal resources are unlikely to be developed in these areas because the rule would permit surface occupancy but prohibits road construction and reconstruction to access the geothermal resource. Experience elsewhere with oil and gas leases, which use similar exploration methods, suggest that operators believe they cannot develop leases without the ability to build roads.

Phosphate. There are 13,400 of known unleased deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) of this total would be managed under the Idaho Roadless Rule Backcountry and GFRG themes. Under these themes, road construction or reconstruction would be permissible to develop phosphate resources. Consequently, any unleased phosphate deposits could be leased to provide for the mining of phosphate reserves. If fully developed, roughly 545 million tons of phosphate could potentially be recovered³⁹. About 1,300 acres of known unleased deposits located in the Primitive theme would not likely be leased and developed because of the road prohibitions.

There would be no near-term impacts on the recovery of phosphate resources under the Idaho Roadless Rule because the foreseeable development would occur in the Backcountry and GFRG themes, which are not subject to the road construction/reconstruction prohibitions. The longer term impact could be the potential loss of recoverable phosphate from the 1,300 acres of presently known unleased

³⁹ Recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

phosphate areas (59 million tons estimated⁴⁰) and any yet undiscovered phosphate within themes with road prohibitions.

SALEABLE MINERALS: AFFECTED ENVIRONMENT

Statewide production of mineral materials in Idaho averaged 22.67 million tons per year for the 3-year period from 2002 through 2004. In comparison, the total tonnage of mineral material dispositions from Idaho's national forests reported for fiscal years 2003 through 2005 are shown in table 3-22:

Table 3-22. Mineral material dispositions from Idaho national forests, fiscal years 2003–2005

Fiscal year	Sales	Free use	Forest Service use
	-----tons-----		
2003	14,856	31,867	122,220
2004	65,612	80,713	137,784
2005	64,303	78,149	131,905
Average	48,257	63,576	130,636

The total average production of mineral materials from NFS lands represents just over 1 percent of the total mineral materials production for all of Idaho. Although a specific breakdown of amounts of mineral materials generated from roadless areas is not available, a survey of minerals specialists in four national forests with the largest reported mineral material tonnage suggests that mineral material contributions from roadless areas are generally small and used only for public road projects (free use) or local Forest Service use⁴¹. This lack of commercial interest is likely due to: roadless areas are generally remote compared to where mineral materials are needed; the terrain is too rugged for developing such a low value commodity; and there is widespread availability of other mineral material sources outside of roadless areas.

The amount of road construction or reconstruction associated with the small volume of mineral materials produced from Idaho Roadless Areas is included in the 1-mile-per-year estimate for all non-timber roads.

SALEABLE MINERALS: ENVIRONMENTAL CONSEQUENCES

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction or reconstruction associated with developing new mineral material sites within Idaho Roadless Areas.

It is possible that new mineral material sites or expansion of existing sites could occur within roadless areas to provide material for new road construction or reconstruction associated with any of the exceptions under the 2001 Roadless Rule or for use on other

⁴⁰ Recoverable reserve figure is based on typical recovery rates of existing mines in the area and is subject to significant variation depending on actual conditions encountered should these lands be mined.

⁴¹ Only free use permits within Idaho Roadless Areas were issued on these units.

Forest Service projects. Such mineral material sites would have to be developed along an existing road or adjacent to a road being built under one of the exceptions to the rule. This is expected to be a rare circumstance.

Because there has historically been little interest in the use of mineral materials from Idaho Roadless Areas, except for relatively small volumes for Forest Service projects, the effects on the production of this resource under the 2001 Roadless Rule should be minimal.

Existing Plans

About 1.262 million acres, or 14 percent of the total Idaho Roadless Areas, are within management prescriptions similar to the GFRG theme. These GFRG prescriptions permit road construction or reconstruction to develop or expand mineral material sites. Under most other Existing Plan prescriptions equivalent to the Wild Land Recreation, Primitive and Backcountry themes, road construction or reconstruction for mineral material purposes could occur only under very limited circumstances.

Even with the access permitted under the GFRG theme, the remoteness of roadless areas and the widespread availability of mineral material sources outside of roadless areas, create a reasonable expectation that only a minimal volume of mineral materials would come from Idaho Roadless Areas. Assuming the demand for mineral materials remains at current levels, this trend should continue; low volumes of mineral materials would be produced from roadless areas, the principal uses being for Forest Service projects or for the limited instances when roads are constructed within roadless areas. The effects on saleable mineral production under this alternative would be minimal.

The Idaho Roadless Rule (Proposed Action)

The sale of common variety mineral material sales would be prohibited within Wild Land Recreation, Primitive, and SAHTS themes after the effective date of the Idaho Roadless Rule. The rule would permit the Forest Service to use mineral materials within these three areas to carry out various Forest Service programs involving construction and maintenance of physical improvements, provided no road construction is needed to access.

Road construction/reconstruction associated with developing new mineral material sites would also be prohibited in the Backcountry theme. Sale of mineral materials would still be allowed under this theme when it is incidental to a permitted activity. Such mineral material sites would have to be developed along an existing road or adjacent to a road being built under one of the exceptions to the rule. This is expected to be a rare circumstance.

Under the GFRG theme, road construction and reconstruction would be allowed to develop mineral material sites for all types of dispositions (that is, sales, free use, and administrative use).

Even with the access permitted under the GFRG theme and the limited exception under the Backcountry theme, the remoteness of roadless areas and the widespread availability of mineral material sources outside of roadless areas, create a reasonable expectation that only a minimal volume of mineral materials would come from Idaho Roadless Areas. Assuming the demand for mineral materials remains at current levels, this trend should continue; low volumes of mineral materials would be produced from roadless areas, with the principal uses being for Forest Service projects or for the limited instances when roads are constructed within roadless areas. The effects on saleable mineral production under this alternative would be minimal.

ABANDONED AND INACTIVE MINES: AFFECTED ENVIRONMENT

Thus far, a total of 315 abandoned mines and associated facilities have been identified on 66 of Idaho Roadless Areas. Abandoned mines, quarries, and other mineral sites that pose human health, environmental, or safety risks may exist in roadless areas and may require some type of reclamation or mitigation. If they do exist and are releasing or have the potential to release a hazardous substance, they would require some type of response action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (P.L. 96-510, Stat. 2767; 42 U.S.C. 9601, 9603, 9607, 9620) (CERCLA) (USDA Office of Inspector General 1996). This act addresses emergency response, site remediation, and spill prevention. The Forest Service has authority for CERCLA enforcement on NFS lands under Executive Order 12580, sec. 2(j). An engineering evaluation/cost analysis or remedial investigation/feasibility study would include provisions for proposed road construction if needed for CERCLA response actions, consistent with the National Contingency Plan, 40 CFR Part 300.

Also, roadless areas may contain sites that require some type of reclamation to resolve violations of the Clean Water Act (USDA Office of Inspector General 1996).

It is common for abandoned mines to have an existing road in place from when the mine was developed. Some road reconstruction may be needed to improve access to the mine itself to accomplish reclamation goals. However, these road improvements would be only temporary because closing and reclaiming the mine roads is integral to achieving the overall reclamation goals of the abandoned mine land program.

ABANDONED AND INACTIVE MINES: ENVIRONMENTAL CONSEQUENCES

All Alternatives

Abandoned and inactive mine sites that represent a public safety hazard but not an environmental hazard are not covered by CERCLA or Clean Water Act authorities. Some of the 315 sites in roadless areas may fit this criterion. If so, prohibitions on road construction or reconstruction may prohibit the Forest Service from taking corrective action at a specific site to reduce a threat to public safety.

2001 Roadless Rule (No Action)

An exception under the 2001 Roadless Rule provides for the construction or reconstruction of roads needed to conduct a response action under CERCLA or to conduct a natural resource restoration action under CERCLA, Oil and Hazardous Substance Liability, Sec. 311 of the Clean Water Act, or the Oil Pollution Act.

Therefore, under this alternative, the Forest Service would continue to respond to CERCLA violations that may be encountered at the 315 abandoned mines, quarries, and other mineral sites that have been currently identified within 66 of Idaho Roadless Areas as well as at any sites identified in the future. Construction or reconstruction of any necessary temporary roads for this activity would be permissible. The exact number of these identified sites that may result in CERCLA violations is not known until site-specific assessments are completed.

Existing Plans

Under Existing Plans, the Forest Service would continue to respond to CERCLA violations at abandoned mines, quarries, and other mineral sites that are located within roadless areas where road construction or reconstruction is permissible (table 3-23). A forest plan could be amended to permit road construction/reconstruction if road access is necessary to respond to CERCLA violations in areas with management prescriptions that prohibit new roads.

Table 3-23. Number of abandoned mine/facility sites by under the Existing Plan and the Idaho Roadless Rule, by theme

Theme	Existing plans no. of mine/facility sites	Idaho Roadless Rule no. of mine/facility sites
Wild Land Recreation	18	22
Primitive	53	33
Backcountry	181	247
GFRG	55	5
SAHTS	0	0
Forest plan special areas	8	8
Total	315	315

The Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule includes an exception that would permit road construction or reconstruction in all themes when provided by statute or treaty or pursuant to reserved or outstanding rights or other legal duty of the United States. Under this exemption roads could be constructed or reconstructed to respond to CERCLA violations.

Therefore, under this alternative, the Forest Service would continue to respond to CERCLA violations that may be encountered at the 315 abandoned mines, quarries, and other mineral sites that have been currently identified within 66 of Idaho Roadless Areas.

GEOLOGICAL AND PALEONTOLOGICAL RESOURCES: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Paleontological resources are recognized as important both for their scientific and natural resource values and in terms of the active protection required in their management. Identification of fossil resource probability in an area and the appropriate management prescriptions are accomplished in the forest planning process. Management prescriptions are generally based on scientific significance of a specimen and sensitivity ranking of a locality. Existing policies regulate the collection and disposition of vertebrate but usually not invertebrate or plant fossils. Generally, NFS lands are available for collecting rocks and minerals, except on lands withdrawn to prohibit these activities.

Geologic processes such as landslides, earthquakes, or volcanic hazards affect human lives. To enhance public understanding and appreciation of them, the Forest Service may develop interpretive sites to highlight examples of them.

Karst and cave resources occur on NFS lands in Idaho that are underlain by limestone or marble or in areas that have exposed basaltic flows. Some of the values associated with karst and cave resources are their ability to store and transmit groundwater, importance as subterranean wildlife habitats, importance as cultural resource or paleontological sites, and ability to provide interpretive sites or recreational opportunities for spelunkers or cavers. They can also present hazards, such as sinkholes, to resource use and development.

The geologic and paleontological resources described above are not predicted to result in any new road construction or reconstruction in roadless areas; therefore, no effects under the Proposed Action or any alternative are expected.

ENERGY CORRIDORS: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Recognizing the fundamental importance of the delivery of energy supplies to the Nation's economic well-being, Congress passed Section 368 of the Energy Policy Act of 2005 to require certain Federal Agencies to designate energy corridors on Federal lands in 11 western states, including Idaho, and to coordinate with each other to create a cooperative, efficient process for applicants to apply for rights-of-way in such corridors. Congress stated in Section 368 that the Agencies should incorporate the designated corridors into their respective land use or resource management plans. Congress also directed the Agencies to conduct environmental reviews that are required to designate corridors and add the designated corridors to the plans.

As directed by Congress in Section 368 of the Energy Policy Act of 2005, the Forest Service is participating in preparing a programmatic EIS to designate energy corridors on land it administers for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities in 11 contiguous western states and to incorporate these

designations into affected Agency land use plans (USDE, USDI BLM, USDA Forest Service, 2005). Energy corridors not addressed in the programmatic analysis would be subject to a separate environmental analysis.

None of the Idaho corridors being addressed in the programmatic EIS would affect Idaho Roadless Areas; therefore, no effects on roadless areas due to these designated energy corridors are anticipated.

3.6 Physical Resources

INTRODUCTION

The Physical Resources analysis evaluates the potential environmental consequences on soil, water, and air. These resources have measurable characteristics that can be assessed in light of the prohibitions and permissions for timber cutting, road construction/reconstruction, and discretionary mineral activities, as well as natural processes. High quality or undisturbed soil, water, and air are important characteristics of Idaho Roadless Areas; therefore, the analysis evaluates the potential consequences to these components.

SOILS—AFFECTED ENVIRONMENT

The soil resource is a key element for maintaining the productive potential of an area. Maintenance is dependent on the protection of the surface soils from erosion, displacement and compaction, and the continued input of organic matter to the soil.

Road construction, reconstruction and timber cutting can affect soil productivity by compacting soils, increasing erosion, displacing soils, depleting nutrients, increasing overland flow in areas of high amounts of precipitation and soil disturbance, and reducing soil strength.

About 23 million acres in Idaho have highly sensitive soils, of which about 3 million acres may be found in Idaho Roadless Areas (Natural Resource Conservation Service [NRCS] (STATSGO) Soils Map for Idaho). These are soils prone to surface erosion, and have terrain susceptible to landslides.

SOILS—ENVIRONMENTAL CONSEQUENCES

The soils analysis evaluates the number of acres of sensitive soils with high hillslope erosion potential and/or landslide risks, by management theme.

All Alternatives

Best management practices (BMPs) and contract requirements.⁴² BMPs represent the state of current knowledge on preventing pollution from non-point sources. Using the most up-to-date BMPs for the design, operation, and maintenance of forest roads and timber cutting and other ground-disturbing activities would prevent or mitigate most

⁴² BMPs are defined in *The State of Idaho Water Quality Standards and Wastewater Treatment Requirements* (Idaho Administrative Procedures Act 16.01.2003,01) as “a practice or combination of practices determined by the Department [of Health and Welfare] to be the most effective and practicable means of preventing or reducing the amount of pollution generated by nonpoint sources”. The Idaho Division of Environmental Quality is delegated authority to implement Section 208 of the Federal Clean Water Act to evaluate whether the BMPs adequately protect beneficial uses. In 1980, the Idaho Water Quality Standards were amended to identify the Forest Practices Act rules and regulations as the silvicultural BMPs for Idaho (Idaho Department of Health and Welfare 1985, 1989 as reported in Seyedbagheri 1996).

adverse impacts to watershed resources, including soils. It is assumed that each project would implement BMPs. Forest practices audit results in Idaho show that 99.6 percent of BMPs are implemented (IDEQ 2007).

Existing leases. None of the alternatives would prohibit road construction or reconstruction on existing leases. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres associated with the Smoky Canyon Mine expansion are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon Mine expansion would affect the Sage Creek and Meade Peak Roadless Areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas would likely be permitted and developed sometime in the extended future (50 or more years). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas. Environmental reviews would be conducted prior to exploration and development and any necessary mitigation to lessen impacts on soil resources would be considered.

Table 3-24. Acres by management theme, by alternative having high sensitivity soils

Theme	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Wild Land Recreation	0	221,900	270,200
Primitive	0	817,200	610,800
SAHTS	0	0	24,100
Backcountry	3,094,200	1,503,400	1,842,500
GFRG	0	440,300	235,200
Forest plan special areas		111,400	111,400

2001 Roadless Rule (No Action)

About 3 million acres of the 9.3 million acres of Idaho Roadless Areas have soils that are highly susceptible to erosion and landslide risk (table 3-24). Generally, road construction can increase the risk and extent of erosion and landslide risk on these landtypes. Often road reconstruction can reduce the risk by fixing existing erosion and landslide sources (USDA Forest Service 2000r). The 2001 Roadless Rule generally prohibits road construction and reconstruction, thereby limiting the risk of erosion and landslides. Only about 15 miles of road construction or reconstruction are projected to occur in the foreseeable future (next 15 years) in Idaho Roadless Areas under the 2001 Roadless Rule. This level of construction/reconstruction would have a negligible effect on soil processes.

The 2001 Roadless Rule prohibits road construction/reconstruction for new mineral leases. Mineral and energy development would be permitted as long as new roads are

not needed and existing roads do not need reconstructed; however, without road access it is unlikely development would occur (chapter 3, Assumptions and Projections). Based on this assumption there would be limited risk to soil resources.

Existing Plans

Under Existing Plans road construction/reconstruction is prohibited on about 1.1 million acres of highly sensitive soils, except for a few situations; therefore, there would be no effect on about a third of the highly sensitive soils. About 1.5 million acres of highly sensitive soils are in management prescriptions similar to the Backcountry theme. Road construction/reconstruction is permitted to varying degrees in Existing Plans (see appendix B). About 444,000 acres of Existing Plans are in management prescriptions similar to the GFRG theme and have highly sensitive soils (table 3-24). Road construction and reconstruction is permissible in the GFRG theme.

Based on foreseeable projections (chapter 3, Assumptions and Projections) about 180 miles of road are projected to be constructed/reconstructed in the foreseeable future (next 15 years) in Idaho Roadless Areas. This level of construction/reconstruction would have negligible effect on soil processes because the activity would be spread across 6 million acres.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the forest within the Bald Mountain, Bear Creek, and Poker Creek Roadless Areas. An environmental analysis would have to be completed to determine how many of the 6,900 acres could actually be leased.

There is a potential risk to soil resources on these 13,400 acres when and if development should occur. Site-specific analysis would occur prior to any future exploration or development and mitigations applied.

Existing Plans would allow road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half the Idaho Roadless Areas have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific

analysis would occur prior to exploration or development of geothermal energy resources and would include consideration of sensitive soils.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, road construction/reconstruction would be prohibited on about 992,400 acres of highly sensitive soils, except for a few situations; therefore, there would be no effect on about a third of the highly sensitive soils. About 1.84 million acres of highly sensitive soils are in the Backcountry theme in the Idaho Roadless Rule. Road construction and reconstruction would be allowed in limited situations in the Backcountry theme. About 235,200 acres are in the GFRG theme which permits road construction and reconstruction activities (table 3-24).

Based on foreseeable projections (chapter 3, Assumptions and Projections) about 60 miles of road are anticipated to be constructed/reconstructed over the foreseeable future (next 15 years) in Idaho Roadless Areas. This level of construction/reconstruction would have negligible effect on soil processes because it would be spread across about 6 million acres. In addition, the Idaho Roadless Rule emphasizes using techniques to reduce resource effects from road construction.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to soil resources on these 12,100 acres when and if development should occur. Site-specific analysis would occur prior to any future exploration or development and mitigations applied.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section) and there would be no effect on soil resources found in this area.

The Idaho Roadless Rule would also allow road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would occur prior to

exploration or development of geothermal energy resources and would include consideration of sensitive soils.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No soil resources would be affected in these areas.

WATER—AFFECTED ENVIRONMENT

Water quality. Roads, timber cutting, mining, energy development, and other land-disturbing activities may indirectly affect water quality by baring soil surfaces to erosion or increasing the release of certain nutrients from the decomposition of timber cutting byproducts (leaves, branches, and other organic matter). Nutrients such as nitrogen, phosphorous, potassium, and calcium may increase in stream water following timber management activities (Hornbeck and Leak 1992). Elevated nutrient levels in streamflow usually return to normal in 1 to 4 years (Chamberlin et al. 1991).

The Environmental Protection Agency (EPA) has delegated the primary responsibility to implement actions that comply with the Clean Water Act to the State and Tribes to assure management practices comply with their requirements. State-integrated 303(d)/305(b) reports are generally submitted to and approved by the EPA every 2 years. These reports enumerate the number of water bodies not meeting their beneficial uses and State water quality standards. About 8,600 miles of stream in Idaho do not meet State water quality standards, of which about 445 miles (5 percent) are in Idaho Roadless Areas.

Idaho has completed total daily maximum load (TMDL) analysis for many of the 303(d) listed watersheds. The Forest Service has been an active cooperator in this effort and this cooperation will continue into the future. As these reports or watershed analyses are completed, restoration needs are identified, prioritized, and corrective actions will be taken on national forests in Idaho as funding becomes available. Budgets used for watershed restoration may remain flat in nominal terms but decline in real terms into the foreseeable future.

Water supply. Growing populations in urban and rural areas will increase demand for reliable quantities of high quality water for domestic, agricultural, and industrial purposes. Communities dependent on surface water supplies are most vulnerable to changes as a result of land management actions. At present 72 public water supplies use surface water within the State. Of the 5.2 million acres of public water supplies in Idaho, about 409,000 acres (8 percent) are in 59 roadless areas (fig. 3-12, table 3-26, and appendix D). The number of communities and the number of total users of water flowing from watersheds containing NFS lands are likely to increase as the populations grow.

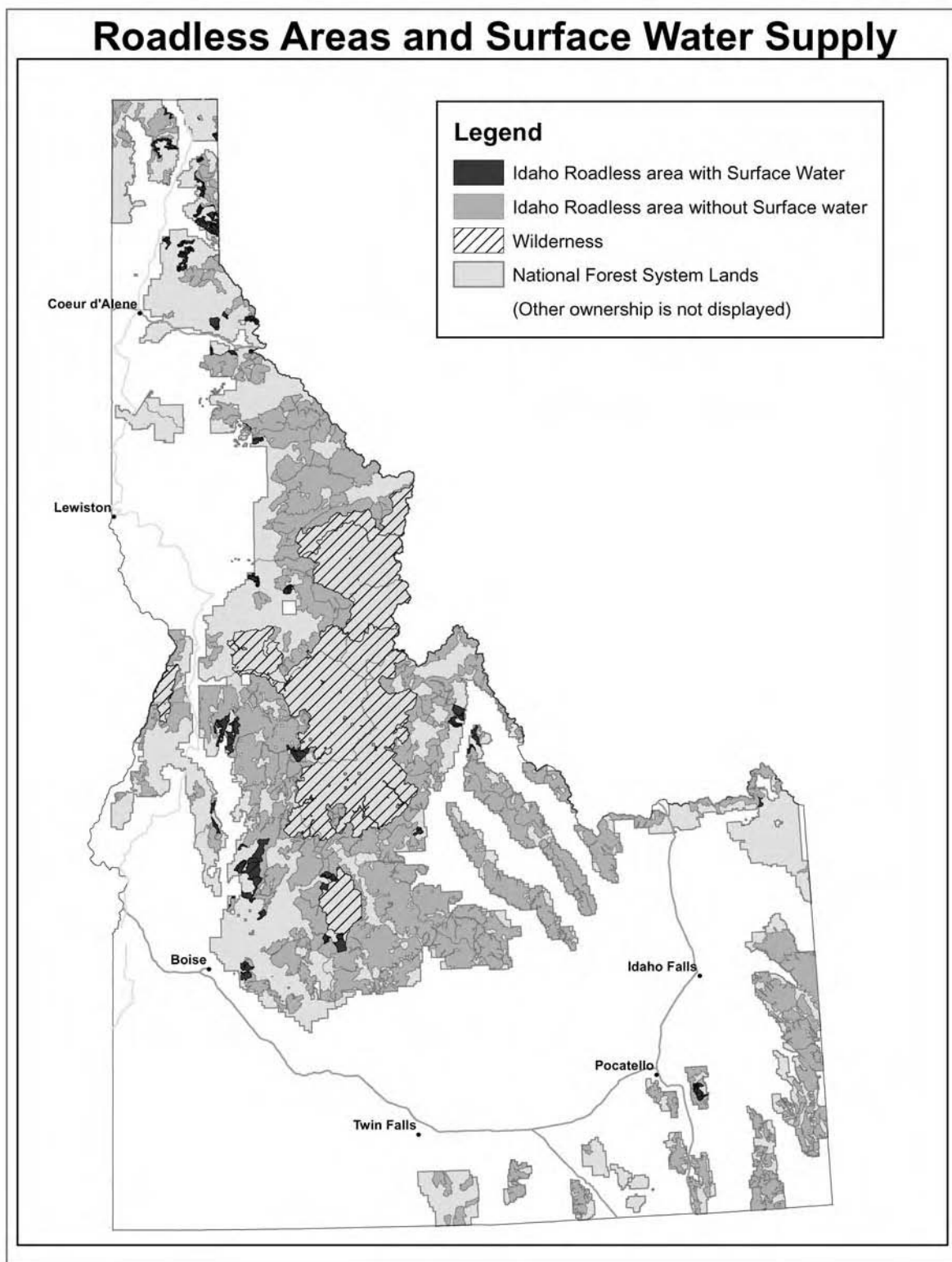


Figure 3-12. Overlap of Idaho Roadless Areas with surface drinking water supplies.

WATER—ENVIRONMENTAL CONSEQUENCES

The watershed analysis evaluates: (1) the number of Idaho Roadless Areas located in watersheds that do not meet water quality standards identified in Idaho's 303(d) list of impaired watersheds; and (2) the acres of overlap with surface drinking water sources.

All Alternatives

Water yield and flooding. Large magnitude flood events are generally the result of extended periods of precipitation and/or rapid snow melt runoff that exceeds the capacity of the soil to hold additional water (Lull and Reinhart 1972, Swanston 1991). Although land use practices may reduce soil water-holding ability, flooding can occur regardless of the land use practices. The increased risk of flood flows from small research watersheds following logging has been documented.

Small watershed studies in the Rocky Mountains indicate that a 15 percent or greater timber harvest (activities that generally remove the overstory canopy) can increase measurable annual water yield (Stednick 1996). Though possible, under foreseeable management scenarios, it is unlikely that any small watershed (10,000 to 40,000 acres) would be harvested at levels approaching 15 percent in any of the alternatives within a 25- to 30-year tree/vegetation recovery period. Therefore, neither flooding nor total water yield is anticipated in these small watersheds as a result of any of the alternatives. However, large-scale wildfires may reduce tree cover by more than 15 percent within small watersheds. In this case, increased risk flooding and debris flows would be anticipated (Parrett et al. 2004).

Timber harvest activities. Timber harvest includes two general types of activities that may affect water resources: (1) the cutting and skidding or other transport of the trees within the logging unit, and (2) post-logging residue fuels treatment.

In 1974 the State of Idaho established a comprehensive Forest Practices Act (Idaho Code 38-13). The purpose is to encourage timber harvest and related activities that maintain or enhance trees, soil, water, wildlife and aquatic habitat. BMPs have been promulgated as Rules Pertaining to the Idaho Forest Practices Act (IDAPA 20.02.1). Since their adoption BMPs have been an effective tool for minimizing impacts from forest practices (IDL 2000). In addition, Forest Service Contract Provisions have improved, specifically the provisions that regulate how logs are moved from where the tree was felled within the harvest unit to landings where they can be loaded on trucks.

Jammer logging, with its high road densities, is no longer practiced on NFS lands. Traditional skid trails may still be used but today they are required to be carefully located to minimize the density needed and are used only under specified soil moisture conditions. Other practices used include logging over frozen ground and snow, more frequent use of felling/bunching equipment, and use of forwarders to reduce the number of equipment passes over soil surfaces. Skyline and/or helicopter yarding is now standard on steeper terrain. These practices are designed to reduce physical ground disturbance.

Fuels treatments can vary by site and may include: hand or machine piling and burning, broadcast burning, whole tree yarding, and either selling the slash as a product or burning large piles at the landing. Of these, machine piling must be carefully conducted to minimize impacts such as bare soil; soil compaction (with reduced infiltration rates, greater surface runoff, and loss of productivity); and associated potential surface erosion (2400-6 and 2400-6T Standard and Special Contract Provisions, R1/4 Soil and Water Conservation Practices).

Fire frequency. It is anticipated that the warmer conditions with earlier snow melt seen in Idaho over the past decade would continue. The risk of wildland fire would likely increase commensurate with the warming climate. Continued efforts to reduce fuel hazards by thinning vegetative fuel cover, conducting controlled burns, and wider use of prescribed natural fire would be ongoing. Priority for fuels treatment and fire suppression would continue to be given to wildland urban interface areas and municipal watersheds (Westerling et al. 2006, Mote et al. 2005).

Roads and timber cutting effect on runoff timing. Timing of water runoff (how quickly a watershed generates runoff and the time it takes for that water to travel downstream) can change as roads and related drainage structures intercept, collect, and divert water. This accelerates water delivery to the stream, by intercepting, concentrating, and diverting runoff resulting in more water becoming storm runoff, which increases the potential for runoff peaks to occur earlier, be of greater magnitude, and recede more quickly than in unroaded watersheds (Wemple et al. 1996, USDA Forest Service 2000r). In addition, timber cutting can reduce the percentage of precipitation that otherwise would be intercepted and evaporated before hitting the soil or water that would have been used by trees is available for runoff. The USDA publication *Forest Service Roads: A Synthesis of Scientific Information* (USDA Forest Service 2000r) summarizes most of the effects of roads and timber harvests on hydrologic regimes.

Temperature. Road construction, reconstruction, and timber harvest may cause water temperature to change where groundwater is intercepted and brought to the surface or where loss of tree cover in riparian areas reduces shading. These effects are especially pronounced where the stream channel shape is wider and shallower (Hornbeck and Leak 1992). Temperatures may rise sharply in exposed areas and some of those elevated temperatures may then return to normal levels as water re-enters shaded areas downstream or receives cool inflow from other streams or groundwater (USDA Forest Service 2000g). Smaller or shallower streams are generally more susceptible to temperature fluctuations than larger or deeper streams (Chamberlin et al. 1991).

Temporary roads. To address long-term road-caused erosion and sedimentation and to reduce road maintenance costs, a large percentage of new roads used for timber harvest (whether temporary or designed system roads) would be closed following construction. Both categories would have increased risks of erosion and sedimentation during the construction phase and for the first few years after construction. Temporary roads built with fewer design specifications may present a higher short-term risk than designed

roads with detailed construction specifications. Research in Idaho has shown that appropriate stabilization techniques can greatly reduce road-related erosion (Burroughs and King 1989). Roads closed and left in a self-maintaining, long-term storage condition, or decommissioned, should eventually recover to near background levels of erosion and sedimentation risk as vegetation reestablishes effective ground cover increases. The length of time would vary according to factors such as treatments used when road was closed, climate, soil type, and terrain.

Budget trends anticipated. Budgets are likely to remain flat in nominal terms but decline in real terms. This implies: (1) reducing the miles of roads being maintained by putting roads into self-maintaining, long-term storage, or decommissioning (obliterating) them; (2) little new construction; and (3) lowering maintenance standards on roads remaining. These changes would occur at the very time when an aging population may desire more vehicle access on higher standard roads.

Existing phosphate leases. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres, associated with the Smoky Canyon Mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon Mine expansion would affect the Sage Creek and Meade Peak Roadless Areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas, would likely be permitted and developed sometime in the extended future (50 or more years). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas. It is likely new protective measures to address selenium would be incorporated into the mine plan of operations before these mines become active. In addition, three of the roadless areas (Dry Ridge, Huckleberry Basin, and Stump Creek) have 303(d) listed streams. Any future development would require separate analysis to address a specific plan of operations. It is likely mitigation would be required to reduce potential effects from selenium and address 303(d) streams.

2001 Roadless Rule (No Action)

Under the 2001 Roadless Rule, road construction, reconstruction, and timber cutting would be permissible in limited situations. About 15 miles of road are projected to be constructed/reconstructed and timber cutting is projected to occur on 1,500 acres over the next 15 years. About 445 miles of stream have been listed as 303(d) within the 9.3 million acres of Idaho Roadless Areas (table 3-25). There are about 409,000 acres within roadless areas that provide a source of drinking water (table 3-26). Based on the foreseeable projections, the limited road construction, reconstruction, and timber cutting would have negligible effects on 303(d) listed streams or drinking water.

Under the 2001 Roadless Rule, road construction/reconstruction would be prohibited to access known unleased phosphate deposits on 13,400 acres on the Caribou-Targhee National Forest; therefore, there would be no additional effects from phosphate mining these 13,400 acres (see the Minerals section). In addition, it is likely there would be little to no geothermal development within Idaho Roadless Areas under the 2001 Roadless Rule because road construction/reconstruction is prohibited; therefore, there would be no effect from geothermal exploration and development to water resources.

Table 3-25. Total miles of 303(d) listed streams, by management theme, by alternative

Theme	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Wild Land Recreation	0	15	29
Primitive	0	62	47
SAHTS	0	0	4
Backcountry	445	159	210
GFRG	0	84	31
Forest plan special areas	0	125	125

Table 3-26. Acres of watersheds with surface drinking water by management theme, by alternative

Theme	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Wild Land Recreation	0	26,800	29,500
Primitive	0	165,000	119,900
SAHTS	0	0	0
Backcountry	409,100	151,600	230,900
GFRG	0	61,500	24,600
Forest plan special areas	0	4,200	4,200

Existing Plans

About 45 percent ⁴³of the 303(d) listed stream segments are located in management prescriptions similar to the Wild Land Recreation and Primitive themes. Road construction or reconstruction is generally prohibited and very limited timber cutting is permitted (table 3-25). About 48 percent of the source drinking water supplies are also located in these themes (table 3-26). Therefore in these areas there would be little added risk to 303(d) listed streams or source drinking supplies.

About 19 percent of the 303(d) listed stream segments, and 15 percent of the source drinking supplies are located in management prescription similar to the GFRG theme. Road construction and reconstruction are generally allowed in these areas. About 36 percent of the 303(d) listed stream segments and 37 percent of the source drinking water supplies are located in management prescriptions similar to the Backcountry theme. Road construction and reconstruction are only allowed in limited situations (tables 3-25 and 3-26, and appendix B).

⁴³ Includes lands in forest plan special areas.

Based on foreseeable projections, about 180 miles of road are anticipated to be constructed/reconstructed over the next 15 years in Idaho Roadless Areas. About 70 miles are anticipated to be permanent roads, 35 miles temporary, and 75 miles reconstruction. Although even well-designed and -constructed roads would create some increased risk of erosion and sedimentation, proper location and design and the use of BMPs during construction can minimize the risk; however, the risk cannot be totally avoided (see discussion below).

Roads used to facilitate hazardous fuel reduction projects in priority areas could reduce the risks to water resources. Watershed studies have indicated that water and sediment yield increases from fires vary significantly depending on fire intensity and severity. Low-intensity-severity fires generally return to pre-fire conditions within 3 years, while high-intensity-severity fires may take more than 15 years to recover (DeBano et al. 1998). Fuel reduction projects could reduce the severity of wildland fires (USDI, USDA Forest Service 2006).

Currently, all Forest Service permanent and temporary roads needed for timber sales are designed and constructed using water, soil, and air BMPs that meet or exceed those required by the State of Idaho. Road design and management criteria incorporate the latest knowledge and experience, resulting in fewer effects, such as surface erosion, landslides, sedimentation, and dust emissions, on water, soil, and air resources. Proper design and construction of new roads and maintenance of existing and new roads can limit but not eliminate these effects (USDA Forest Service 2000r).

Budgets should remain flat in nominal terms but decline in real terms. This implies: (1) reducing the miles of roads being maintained by putting roads into self-maintaining, long-term storage, or decommissioning (obliterating) them; (2) little new construction; and (3) lowering maintenance standards on roads remaining. To address budget shortfalls, emphasis has been placed on placing existing roads in long-term storage or obliterating them altogether. It is highly likely that many more miles of road would be placed into storage or obliterated than would be built in any of the land management themes (see Road Construction/Reconstruction discussion earlier in chapter 3).

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the forest within the Bald Mountain, Bear Creek, and Poker Creek Roadless Areas. An environmental analysis would have to be completed to determine how many of the 6,900 acres could actually be leased.

Three of the roadless areas (Dry Ridge, Huckleberry Basin, and Stump Creek) have 303(d) listed streams. Any future development would require separate site-specific

analysis to address exploration and development. It is likely mitigation would be required to reduce potential effects from selenium and address 303(d) streams.

Existing Plans would allow road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half of Idaho Roadless Areas have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Water resources, such as 303(d) streams or surface drinking water would be considered during site-specific analysis and mitigations applied.

The Idaho Roadless Rule (Proposed Action)

About a 45 percent of the 303(d) listed stream segments are located in the Wild Land Recreation, Primitive, and SAHTS themes. These themes prohibit road construction or reconstruction and permit very limited, if any, timber cutting (table 3-25). About 37 percent of the source drinking water supplies are also located in these themes (table 3-26). In these themes there would be no effect on 303(d) listed streams or source drinking supplies because limited activities would occur.

About 7 percent of the 303(d) listed stream segments are located in the GFRG theme where road construction and reconstruction are generally permissible; and 47 percent are located the in Backcountry theme where road construction and reconstruction are allowed only in limited situations (table 3-25).

Based on foreseeable projections, about 60 miles of road are anticipated to be constructed/reconstructed over the next 15 years in Idaho Roadless Areas. Of this total about 15 miles would be permanent roads, 26 miles would be temporary, and 22 miles of road would be reconstructed. The risk incurred by building small numbers of mostly temporary roads would be minimal and their adverse effects would last only a few years for those roads that are properly placed into long-term storage or obliterated following the management activity. In addition, the Idaho Roadless Rule emphasizes using techniques to reduce resource effects from road construction.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the

forest) and could eventually be mined over an extended period of time (50 or more years). None of the unleased phosphate areas overlap sources of drinking water; therefore, these foreseeable activities would not affect drinking water. Several 303(d) streams are overlap known unleased phosphate deposits in the Dry Ridge, Huckleberry Basin, and Stump Creek Roadless Areas. Any phosphate mining activities in these roadless areas would have to ensure the streams are not further impaired.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section); and there would be no effect on water resources found in these areas.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would occur prior to exploration or development of geothermal energy resources and would include consideration of water resources.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No water resources would be affected in these areas.

AIR—AFFECTED ENVIRONMENT

Air Quality. Congress established a national goal to prevent visibility impairment and improve visibility in all class I areas. Class I air quality areas are National Forest System wilderness areas, national parks, or national wildlife refuges greater than 5,000 acres in size, designated prior to the establishment of the Clean Air Act Amendments of 1977. Class I areas can also include lands designated by tribes or States. These areas serve as benchmarks for monitoring changes in air quality over adjacent lands. There are four class I areas within Idaho and another 10 within 50 miles of the Idaho border. About 5 million acres of Idaho Roadless Areas are within 50 miles of a class I airshed (fig. 3-13 and table 3-27).

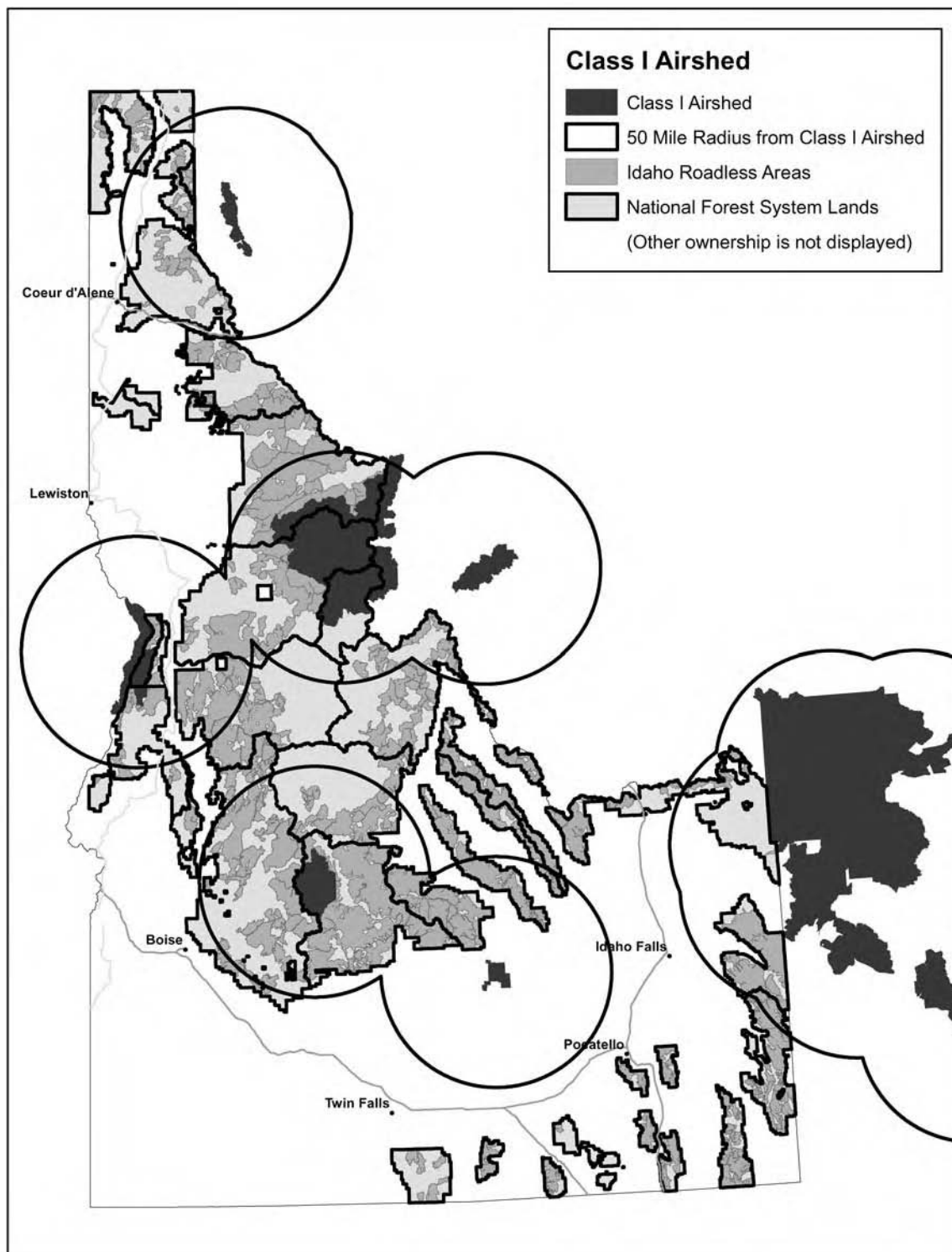


Figure 3-13. Idaho Roadless Areas within 50-mile radius of class I airshed

The goal is to reduce regional haze that now affects class I areas to near natural background levels. Atmospheric emissions from road construction; unsurfaced or gravel road dust; volatile organic compounds from gasoline or soot from diesel engines; open pit mining operations; and smoke from fire-use fires, slash treatment, or wildfires all may contribute to haze levels. The Idaho Department of Environmental Quality (DEQ) is consulted and authorizes prescribed burning to reduce adverse effects by choosing timeframes that will allow for maximum dispersion of smoke (Story and Dzomba 2005).

AIR—ENVIRONMENTAL CONSEQUENCES

About 5 million acres of the 9.3 million acres of Idaho Roadless Areas are within 50 miles of class I air sheds (table 3-27). Atmospheric emissions from road construction and use include particulate matter consisting of suspended (<25 microns in diameter) and larger coarse soils, nitrogen, and volatile organic compounds from gasoline engines, and soot from diesel engines. These pollutants contribute to visibility reduction.

Mechanical and other fuel treatment before prescribed burning in areas with large fuel accumulations is an important aspect to meeting air quality standards. The direct removal of fuel reduces potential site emissions and indirectly reduces fuel consumption, and hence, pollutants. Emissions generated during prescribed burning in untreated forests could exceed standards.

Table 3-27. Number of acres within 50 miles of a class I air quality protection area

Theme	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Wild Land Recreation	0	832,400	879,600
Primitive	0	1,712,300	1,406,300
SAHTS	0	0	46,500
Backcountry	5,542,800	2,370,600	2,871,100
GFRG		395,200	107,000
Forest plan special areas		232,300	232,300

2001 Roadless Rule (No Action)

Under the 2001 Roadless Rule, about 15 miles of road are projected to be constructed/reconstructed over the next 15 years. This level of construction/reconstruction would have no effect on air quality. Timber cutting is projected to occur on about 1,500 acres over the next 15 years. It is likely some of these areas with vegetation treatment would be followed up with prescribed burns. Any burning would be completed in accordance with State air quality regulations. Prescribed burning on these few acres would not have a measurable effect because of the few number of acres treated over an extended period of time and land area. The removal of fuel on these few acres would measurably affect the extent and intensity of wildland fire because so few acres are treated.

Existing Plans

About 2.8 million acres of the class 1 airsheds are located within 50 miles of management prescriptions that permit road construction/reconstruction and timber cutting (table 3-27). Under this alternative about 60 miles of road are anticipated to be constructed/reconstructed over 15 years. It is likely this construction/reconstruction would be spread across Idaho, and not concentrated in one area; therefore, there would be no measurable effect on air quality. Timber cutting is projected to occur on about 42,000 acres from Idaho Roadless Areas over the next 15 years. It is likely many of these areas would be prescribed burned. Although smoke generated from these burns may affect class I areas, any burning would be completed according to State air quality guidelines. Smoke from prescribed burns are more manageable and predictable than those from wildland fires because they are required to adhere to strict burning guidelines.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule road construction/reconstruction is prohibited on about 3,103,500 acres. Generally these areas are close to class I airsheds, because the Wild Land Recreation and Primitive themes generally abut wilderness areas. These prohibitions would not affect class I airsheds because no activities would occur.

Road construction/reconstruction and timber cutting, sale, or removal would be permitted to some degree on about 3 million acres within 50 miles of a class I air shed (table 3-27). About 60 miles of road are projected to be constructed/reconstruction over the next 15 years. This level of construction would have no measurable effect on air quality because it is so dispersed and minute.

Timber cutting, sale, or removal to reduce hazardous fuels and for stewardship purposes is anticipated to occur on about 12,000 acres over the next 15 years. As noted for Existing Plans, any prescribed burning completed on these acres may affect air quality; however, because of strict burning guidelines the overall effect would be negligible.

CUMULATIVE EFFECTS

Cumulative effects for soil, water, and air resources are generally considered as incremental changes that alone are not overwhelming but when combined create impacts that are judged to be detrimental or beneficial. Assessment of management-caused cumulative effects must be done in the spatial and temporal context of naturally occurring events such as wildfire, drought, floods, earthquakes, and insect infestations, which can all drastically alter physical conditions affecting soil, water, and air resources even without human-induced perturbations.

The cumulative effects of some programmatic policy and management decisions — such as INFISH, PACFISH, Northern Rockies Lynx Management direction, management direction for grizzly bears in the Greater Yellowstone Ecosystem, and the Roads Policy

and Travel Management Policy, as described in appendix N – are likely to improve soil, water, and air resources by limiting activities, identifying roads no longer needed, and identifying specifically which roads are open and closed to motorized travel. These actions have the potential to reduce road-related effects. This in combination with declining budgets, resulting in less road construction, and additional emphasis on decommissioning roads would result in a net benefit to soil, water and air resources.

The NFP, HFI, HFRA, and Energy Policy Act were considered by projecting the potential activities (timber cutting and mineral development) that were foreseeable to occur based on the prohibitions and permissions in each alternative. Therefore, these policies were evaluated in the previous sections.

3.7 Botanical Resources

INTRODUCTION

Idaho Roadless Areas contain undisturbed landscapes that provide habitat for some of the rarest elements of the Idaho flora – threatened, endangered, proposed, candidate, and sensitive plant species.

Currently five threatened or candidate plant taxa (species, subspecies, or varieties) occur within Idaho Roadless Areas, according to the Idaho Conservation Data Center's (ICDC) Element Occurrence Database (Idaho Department of Fish and Game [IDFG] 2007). In addition, 69 plant taxa designated as sensitive by Forest Service regional foresters occur within Idaho Roadless Areas based on GIS analysis data: 28 in the Intermountain Region (R4) (USDA Forest Service 2004c) and 41 in the Northern Region (R1) (USDA Forest Service 2004d).

The analysis evaluates the known occurrences of threatened, candidate, and sensitive species and their overlap with Idaho Roadless Areas, and the potential environmental consequences of the prohibitions and permissions to the occurrences.

AFFECTED ENVIRONMENT

Threatened, Endangered, Proposed, and Candidate Plants

Table 3-28 provides a list of plants that have Federal status as threatened or candidate species and whether or not they overlap with Idaho Roadless Areas. There are no plants listed as endangered or proposed for listing under the ESA within NFS lands in Idaho. Of the six threatened and candidate species found in Idaho, three have known occurrences that are located in Idaho Roadless Areas.

Table 3-28. Threatened and candidate species on NFS lands in Idaho: Federal and State status, occurrence within Idaho Roadless Areas, and National Forest distribution

Species name	Common name	Global ¹	State ²	Federal status ³	Occurrence within Idaho Roadless Areas ⁴	National forest distribution ⁵
<i>Botrychium lineare</i>	Slender Moonwort	G1	SH	Candidate	No	Sawtooth (ph on all Idaho forests)
<i>Castilleja christii</i>	Christ's Indian paintbrush	G1	S1	Candidate	Mount Harrison	Sawtooth
<i>Howellia aquatilis</i>	Water howellia	G2	S1	Threatened	No	ph (Nez-Perce, Clearwater, Idaho-Panhandle)
<i>Mirabilis macfarlanei</i>	MacFarlane's four-o'clock	G2	S1	Threatened	Big Canyon Idaho	Nez-Perce (administered by Wallowa-Whitman)
<i>Silene spaldingii</i>	Spalding's silene	G2	S1	Threatened	No	Nez-Perce (ph on Clearwater)
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses	G2	S1	Threatened	Garns Mountain	Caribou-Targhee

¹ **Global** = Global ranking as assigned by Idaho Natural Heritage Program, **G1** = Globally critically imperiled, **G2** = Globally imperiled.

² **State** = Idaho State ranking, **SH** = State historical occurrence, **S1** = State critically imperiled

³ **Federal** = listing as per the Endangered Species Act

⁴ Occurrence based on GIS overlay with Idaho Roadless Areas.

⁵ **ph** = potential habitat.

Slender moonwort (*Botrychium lineare*). Slender moonwort may occur within the roadless areas in montane forest or meadow habitats on all forests. The only known population occurs at higher elevations on the Sawtooth National Forest, not within a roadless area.

Christ's Indian paintbrush (*Castilleja christii*). This paintbrush is found only on the top of Mount Harrison, Cassia County, on the Sawtooth National Forest, within the Mount Harrison roadless area. The species occurs within the Mt. Harrison Interpretive Area, with portions of the population occurring within a research natural area. Although portions of the population(s) fall within several roadless areas, management of this species is guided by a conservation agreement recently renewed (2005) by the Sawtooth National Forest with the U.S. Fish and Wildlife Service.

Water howellia (*Howellia aquatilis*). Water howellia is a regional endemic that grows in seasonal pools, ponds, and old river oxbows. No occurrences have been found on NFS lands within Idaho Roadless Areas. Potential habitat for this species occurs on the Idaho Panhandle, Clearwater, and Nez-Perce National Forests.

Macfarlane's four-o'clock (*Mirabilis macfarlanei*). This species is a local endemic found on terraces and slopes supporting bluebunch wheatgrass in the Hell's Canyon National Recreation Area. The six occurrences found within the Big Canyon roadless area are on lands administered by the Wallowa-Whitman National Forest.

Spalding's catchfly (*Silene spaldingii*). This species is a Palouse prairie grasslands endemic. In Idaho, several populations occur in the west-central portion of the State, including two occurrences on the Nez-Perce National Forest. No occurrences of this species are found within Idaho Roadless Areas.

Ute ladies'-tresses (*Spiranthes diluvialis*). Five populations of Ute ladies'-tresses are found in the Garns Mountain Roadless Area on the Targhee portion of the Caribou-Targhee National Forest. This species is jointly managed by the Forest Service and BLM under the South Fork Activity Plan. Habitat for this species is found along mesic meadows and floodplains in low gradient valley bottoms along the South Fork of the Snake River.

Sensitive Plant Species

Currently there are 69 sensitive plant taxa known to occur within 82 Idaho Roadless Areas, including the six threatened and candidate species previously discussed (tables 3-28 and 3-29, and appendix K, tables K-1 and K-2). Populations of these plant species are infrequent and many have a localized distribution across the landscape. They are associated with an array of plant communities, unique habitats, and geological formations. The character, distribution, and extent of habitats depend on numerous factors: the size of the area; the type, intensity and timing of management-induced and natural disturbances that have occurred; and the landscape context within which they are found. Each species is also different with respect to critical life history characteristics, habitat requirements, and ecological sensitivity. Consequently, it is extremely difficult, and potentially misleading, to generalize the effects of various management activities on all these species. This is especially true with narrowly endemic species and populations at the fringe of their natural range. Some of the species occurring within certain management themes areas may be highlighted for discussion because of the significance of the potential effects of those activities.

Habitat Guilds. Sensitive plant species are often found in specific habitats. Because of the large number of rare species within Idaho, sensitive plants can be assigned to one or more rare plant guilds, which are groupings based on similar habitat characteristics and life history requirements that are useful for analysis purposes. The groupings or habitat associations used for this analysis are: aquatic, riparian, fens, grasslands, wetlands and moist meadows, forest understory, shrublands and woodlands, subalpine meadows, alpine, and rock outcrops/talus slopes.

Table 3-29. Distribution of TCS1 species within Idaho Roadless Areas, by habitat guilds

Riparian/ forest streambanks	Moist cliffs, seeps, and banks
<i>Allium madidum</i>	<i>Mimulus alsinoides</i>
<i>Rubus bartonianus</i>	<i>Mimulus ampliatus</i>
<i>Spiranthes diluvialis</i>	
<i>Thelypteris nevadensis</i>	Wetlands and moist meadows
	<i>Agoseris lackschewitzii</i>
Fens and fen margins	<i>Botrychium lanceolatum</i> var. <i>lanceolatum</i>
<i>Carex leptalea</i>	<i>Dryopteris cristata</i>
<i>Drosera intermedia</i>	<i>Epilobium palustris</i>
<i>Gaultheria hispidula</i>	<i>Hypericum majus</i>
<i>Lycopodiella inundata</i>	<i>Iris versicolor</i>
<i>Meesia longiseta</i>	<i>Schoenoplectus subterminalis</i>
<i>Salix pedicellaris</i>	
<i>Scheuchzeria palustris</i>	Forest understory and gaps
<i>Trientalis arctica</i>	<i>Allotropa virgata</i>
<i>Vaccinium oycoccos</i>	<i>Astragalus paysonii</i>
	<i>Blechnum spicant</i>
Aquatic	<i>Botrychium lineare</i>
<i>Howellia aquatica</i>	<i>Botrychium minganense</i>
	<i>Botrychium montanum</i>
Grasslands	<i>Botrychium pedunculatum</i>
<i>Allium tolmiei</i> var. <i>persimile</i>	<i>Botrychium pinnatum</i>
<i>Botrychium ascendens</i>	<i>Buxbaumia viridis</i>
<i>Calochortus nitidus</i>	<i>Calamagrostis tweedii</i>
<i>Halimolobos perplexa</i> var. <i>perplexa</i>	<i>Cardamine constancei</i>
<i>Mirabilis macfarlanei</i>	<i>Cornus nuttallii</i>
<i>Silene spaldingii</i>	<i>Cypripedium fasciculatum</i>
	<i>Hookeria lucens</i>
Shrublands/ woodlands	<i>Lycopodium dendroideum</i>
<i>Haplopappus insecticruris</i>	<i>Phegopteris connectilis</i>
<i>Mimulus clivicola</i>	<i>Polystichum braunii</i>
<i>Oxytropis besseyi</i> var. <i>salmonensis</i>	<i>Rhizomnium nudum</i>
<i>Penstemon lemhiensis</i>	<i>Streptopus streptopoides</i>
<i>Phacelia minutissima</i>	<i>Synthesis platycarpa</i>
	<i>Waldsteinia idahoensis</i>
Subalpine openings, meadows and grasslands	
<i>Botrychium lineare</i>	Alpine
<i>Castilleja christii</i>	<i>Astragalus vexilliflexus</i> var. <i>nubilis</i>
<i>Cymopterus davisii</i>	<i>Draba globosa</i>
<i>Cymopterus douglasii</i>	<i>Lesquerella paysonii</i>
<i>Dasynotus daubenmirei</i>	<i>Poa abbreviate</i> ssp. <i>marshii</i>
<i>Douglasia idahoensis</i>	
<i>Saxifraga bryophora</i> var. <i>tobiasiae</i>	
Cliffs, rocky outcrops and talus slopes	
<i>Astragalus amnis-amissi</i>	
<i>Astragalus aquilonius</i>	
<i>Chrysothamnus parryi</i> ssp. <i>montanus</i>	
<i>Collomia debilis</i> var. <i>camporum</i>	
<i>Thelypodium repandum</i>	
<i>Thlaspi idahoense</i> var. <i>aileeniae</i>	
¹ TCS = threatened, candidate, sensitive	

ENVIRONMENTAL CONSEQUENCES

All Alternatives

Field surveys would be conducted in all areas considered for project activities that contain high potential suitable habitat, and appropriate mitigation would be applied. There are 1,165 individual known occurrences of various threatened, candidate, and sensitive (TCS) species in Idaho Roadless Areas (appendix K, tables K-1 and K-2).

Road Construction, Reconstruction, and Maintenance. Past, present and future construction and maintenance of roads have both adverse and positive effects on roadside plant populations. Road corridors associated with energy development in areas with or without transmission lines have been known to reduce the overall survival rate of the endangered Kern mallow (Cypher 2005). On the other hand, road maintenance may benefit those species that have a competitive edge in disturbed environments or depend on early seral conditions to establish new individuals and populations. Roads increase access to and provide an avenue for weed invasion. Roads can be placed on ridgetops, in riparian areas, or through scree slopes, which are often important habitats for a number of species. Reconstruction and maintenance of existing roads can directly or indirectly affect plant populations by introducing competitive weeds and altering availability of light, nutrients, and moisture. Maintenance of roads may increase traffic along these roads and thus increase potential for disturbance of plant populations adjacent to roads.

Habitat fragmentation. Habitat fragmentation can affect rare plant species demographics (location) and genetics. Habitat fragmentation may change a plant species demographic by affecting their interaction with pollinators, interrupting their ability to move and changing their micro-climate (the local area they live in) by opening up the vegetation. Habitat fragmentation can affect genetics by increasing self-pollination, or changing the ability for a plant to disperse. It is important to note, however, that these effects have not resulted in large-scale extinctions of any rare forest plants (Honnay and Bossuyt 2005).

A plant's susceptibility to habitat fragmentation depends on life-history traits related to plant dispersal, establishment, or persistence (Kolb and Diekmann 2005). In the case of long-lived perennials, long-term persistence of small and isolated forest plant populations may be due to the fact they reproduce clonally and therefore persist for long generation times. However, the consequences of prolonged clonal reproduction (and suppression of sexual reproduction) has been that locally less-adapted clones become out competed by expanding clone members of more adapted species expanding their range (Hartnett and Bazzaz 1985). Almost all (90 percent) of angiosperms are pollinated by animals, especially insects (Wilcock and Neiland 2002), and fragmentation can negatively affect pollinator abundance, diversity, and visitation (Steffan-Dewenter and Tscharntke 1999).

Although an increasing number of studies conclude that habitat fragmentation is broadly harmful to native bees, not all evidence points in that direction. There is evidence that fractions of native bee communities can persist in habitats that have been modestly altered by human activities (Marlin and LaBerge 2001), and the possible effects of habitat fragmentation on bees are only now beginning to be understood (Cane 2001). Fragmentation implies increased edge effects, which may be as important as isolation (Turner et al. 1996). Edge effects influence plant dynamics such as regeneration, interspecies competition, predation, seed dispersal, and pollination (Murcia 1995). In addition, the changed microclimate of increased air and soil temperature, characterized by increased light penetration, directly affects plant population dynamics. Edge effects also influence bryophyte community structure in border habitats where abrupt differences in microclimatic conditions between the different forest conditions exist (Pharo and Zartman 2007).

Spread of non-native invasive plants and animals and edge-dwelling species. Non-native weeds directly affect plants and plant populations through competitive displacement above ground and in the seed bank. Indirect impacts include herbicide spraying and mechanical ground disturbance to control noxious weeds once they gain a foothold. Competition from invasive non-native species and noxious weeds can result in the loss of habitat, loss of pollinators, and decreased numbers of species. Roads, trails, and canopy reduction can provide ideal pathways for the introduction of exotic and non-native species. Indirectly, herbicide spraying can destroy populations of native pollinators by contaminating nesting materials and pollen resources (Pierson et al., 2000), further decreasing the capability and reproductive success of TCS species. Some species of non-native plants will alter hydrological regimes, changing and reducing the habitat available to TCS plants.

Human access. The most important direct impact on plants related to human access is trampling, both by hikers and via newly available routes for off-highway vehicles use (Liddle 1975, 1991). These types of activities particularly threaten many TCS species. Road building and the development of facilities used by recreationists also contribute to plant impacts, because these developments make more areas accessible and concentrate use; dispersed camping and recreation have similar impacts but these are more difficult to monitor. Parking areas, particularly undesignated areas, can have similar impacts on plants. Other recreational impacts include OHV use, which can also disturb soil and thus affect both habitat and potential habitat. Roads often provide easy access to plant hobbyists and collectors. Roads and trails can contribute to the spread of noxious weeds and can increase accessibility to native wildlife and livestock, which can exacerbate the impacts of trampling and congregation.

Vegetation management impacts. Timber cutting, road construction, and associated infrastructure development may alter the hydrologic processes needed for sensitive plants such as Ute Ladies'-tresses orchid and rare moss species of wetland-associated habitat groups (aquatic, fens and fen margins, riparian, and wet coniferous forest). Changes to the hydrologic processes in wetlands may result in both a decrease and

increase of wetland water levels. Timber cutting can create sudden changes in seral stage, or an abundance of early seral stages, and also reduce the available habitats for those plants that require mid-to-late seral stages (such as clustered lady-slipper orchid). However, those species that prefer openings, early-seral conditions, or some ground disturbance, could benefit from moderate levels of mechanical activities. Changing patch dynamics across the landscape could also have beneficial or adverse effects on TCS plant species and their pollinators. Restoration of historical fire regimes and conditions for different potential vegetation groups may benefit some TCS species in the long term.

Phosphate development. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres, associated with the Smoky Canyon mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon mine expansion would affect the Sage Creek and Meade Peak roadless areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas would likely be permitted and developed sometime in the extended future (50 years or more). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas. Prior to mining plant surveys would be conducted and any special protection measures would be applied.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction/reconstruction across all Idaho Roadless Areas, except under seven exceptions. Timber cutting is also prohibited except in a few cases (such as restoration of ecosystem processes and addressing uncharacteristic wildfire effects). Based on the prohibitions and permissions, about 15 miles of road are projected to be constructed over the next 15 years, and timber cutting is projected to occur on 1,500 acres.

TCS plant species would benefit from the low amount of road construction/reconstruction under the 2001 Roadless Rule. With the few exceptions for timber cutting, this alternative presents a low risk to TCS plant resources because of the lack of potential disturbance.

By restricting timber cutting to activities necessary for resource stewardship, many of the adverse effects of timber cutting would be minimized, while maintaining a management tool potentially needed for ecological restoration. Mechanical vegetation manipulation to reduce fuel loading may be desirable in some areas where there is an abnormally high risk of high intensity, large-scale fires. Fuels reduction stewardship activities may be beneficial to some sensitive plant populations if impacts on their

habitats are not excessive or permanent. Other types of stewardship timber cutting to meet objectives for watershed restoration and enhancement of riparian vegetation could benefit species such as Ute Ladies' tresses orchid.

The priorities for fuels treatments in roadless areas would likely remain in those areas where there is a risk to life and property. With the possible exception of some local site-specific examples, the prohibitions on road construction/reconstruction and most timber cutting activities are not likely to affect the overall amount or severity of wildfires. As a result, the effects of wildfires on TCS plant species are likely to be similar with or without the prohibitions. This alternative would not measurably affect the current ability to manage TCS plant populations or their habitats.

The 2001 Roadless Rule limits road construction and reconstruction to reserved or outstanding rights; or as provided for by statute or treaty; or for the continuation, extension, or renewal of a mineral lease. Because roads cannot be constructed for future mineral leasing, there would be no additional effects on plant species.

No adverse environmental effects on TCS plant species or their habitats would be expected from the 2001 Roadless Rule, because it does not directly authorize any ground-disturbing activities. Ground-disturbing activities permitted under this alternative include limited road construction/ reconstruction and limited timber cutting across the entire 9.3 million acres of Idaho Roadless Areas. The Forest Service and other Government agencies with jurisdictional responsibilities would retain the tools necessary to manage these resources.

Existing Plans

Road construction/reconstruction is prohibited in management prescriptions similar to Wild Land Recreation theme (1,320,800 acres) and is generally not permitted in existing forest plan special areas such as research natural areas, eligible wild and scenic rivers, or designated wild and scenic rivers (about 345,100 acres) (appendix H, table H-9). Limited to no effects on plant species would occur on these lands

Only timber cutting, to a very limited degree, is generally allowed in management prescriptions similar to the Primitive theme (2,131,400 acres). Limited to no effects on plant species would occur on these lands.

About 4,244,500 acres are in management prescriptions similar to Backcountry, where road construction/reconstruction is generally allowed, as is timber cutting for certain purposes. Timber cutting in these prescriptions is generally designed to meet other resource needs. About 500 TCS plant species are known to occur in Backcountry (table 3-30 appendix K, table K-3). About 1,262,400 acres are in prescriptions similar to GFRG, where road construction /reconstruction and timber cutting are allowed; about 100 TCS plant species are known to occur within GFRG (table 3-30 and appendix K, table K-3).

Where road construction/reconstruction and to some degree timber cutting occurs, there is a potential to affect plant species through direct mortality, habitat loss, and

disturbance. About 180 miles of road are projected to be constructed over the next 15 years for timber cutting and non-timber-cutting related activities. Timber cutting is projected to occur on about 42,000 acres over the next 15 years. Based on this degree of foreseeable activity, Existing Plans would most likely fragment some TCS populations and habitats, disrupt plant-pollinator interactions, and provide corridors for non-native species invasion.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 years or more). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the forest within the Bald Mountain, Bear Creek and Poker Creek roadless areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased. There is a potential risk to sensitive plant species habitat on these 13,400 when and if this development occurs. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Existing Plans may allow road construction/reconstruction for geothermal development in Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, because about half the Idaho Roadless Areas in these themes have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Plant resources such as TCS would be considered during site-specific analysis, and mitigations would be applied.

Table 3-30. Number of occurrences of known sensitive plant populations by alternative and similar theme

Alternative	Wild Land Recreation	Primitive SAHTS	Backcountry	GFRG	Forest plan special areas
2001 Roadless Rule			1,165		
Existing Plans	127	166	523	84	265
Idaho Roadless Rule	141	148	601	10	265

Idaho Roadless Rule (Proposed Action)

Road construction/reconstruction would be prohibited in Wild Land Recreation, Primitive, and SAHTS themes (about 3,103,500 acres), and very limited timber cutting would be allowed in the Primitive and SAHTS themes; therefore, there would be limited to no effects on sensitive plant habitats.

Road construction/reconstruction and timber cutting would be permitted in limited situations in Backcountry (5,246,100 acres) and would be permissible in GFRG (609,500 acres). Ten sensitive plant species are known to occur in GFRG and about 600 plant species occur in the Backcountry theme (table 3-30, and appendix K, table K-4). About 60 miles of road are projected to be constructed/reconstructed over the next 15 years. Timber cutting is projected on 12,000 acres over the next 15 years for stewardship and fuel reduction purposes. This would affect about 0.1 percent of total Idaho Roadless Area acreage over 15 years.

By restricting timber cutting to activities necessary to address forest health and hazardous fuels, many of the adverse effects of timber cutting would be minimized, while maintaining a management tool potentially needed for ecological restoration. Mechanical vegetation manipulation to reduce fuel loading may be desirable in some areas where there is an abnormally high risk of high intensity, large-scale fires. Fuels reduction activities may be beneficial to some sensitive plant populations if impacts to their habitats are not excessive or permanent. Other types of timber cutting to meet objectives for watershed restoration and enhancement of riparian vegetation could be designed to benefit species such as Ute Ladies' tresses orchid.

The Idaho Roadless Rule would permit road construction/reconstruction and surface occupancy within the Backcountry and GFRG themes to access unleased phosphate deposits. There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 years or more). There is a potential risk to sensitive plant species habitat on these 12,100 acres when and if this development occurs. Site-specific analysis would occur prior to any future leasing and mitigations applied.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore this area would likely not be developed (see Minerals section); and there would be no effect to plant species found in this area.

The Idaho Roadless Rule would also allow road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Plant resources would be considered during site-specific analysis, and mitigations would be applied.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see Minerals section). No plant resources would be affected in these areas.

No adverse environmental effects on TCS plant species or their habitats would be expected from the Idaho Roadless Rule, because it does not directly authorize any ground-disturbing activities. The Forest Service and other Government agencies with jurisdictional responsibilities would retain the tools necessary to manage these resources. The Idaho Roadless Rule would not change current TCS plant direction and would require site-specific analysis prior to implementing projects on the ground.

CUMULATIVE EFFECTS

The past, present, and reasonably foreseeable programmatic actions listed in appendix N have and would generally benefit TCS plant species in Idaho as a whole. PACFISH and INFISH provide protections around riparian habitat where many plant species grow. Existing plans, as well as manual direction (FSM 2670) provide direction to mitigate potential impacts to TCS species resulting from project activities.

The Roads Policy and National Travel Management Policy generally result in reducing disturbance. Although the alternatives permit road construction/reconstruction into roadless areas, the trend has been to construct fewer roads and decommission more roads (Road Construction/Reconstruction section).

The NFP, HFI, HFRA, the Energy Implementation Plan may all encourage activities to occur, but none of these policies dictate where the activities would occur or how they would be designed. Potential foreseeable actions based on these policies, such as timber cutting and mineral and energy development were considered in the analysis. Existing plan direction that provides guidance on how to protect plant species, or conservation strategies for individual plant species can be applied during project design.

Cumulatively, there would be minimal effect to any known occurrence of TCS species in Idaho Roadless Areas under any alternative because these species would be considered in project design and appropriate conservation measures applied.

3.8 Aquatic Species

INTRODUCTION

Idaho Roadless Areas function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undeveloped landscapes that are important to biological diversity and the long-term survival of many at risk species. The analysis evaluates the environmental consequences of the prohibitions and permissions for timber cutting, road construction/reconstruction, and discretionary mineral activities by alternative on selected aquatic species (including threatened, endangered, sensitive (TES), and management indicator species [MIS]) and their habitats.⁴⁴

Species sustainability and ecosystem integrity are aquatic habitat characteristics considered in this analysis. Key characteristics for aquatic species include: threatened and endangered critical habitat, native fish priority watersheds, and native fish strongholds. In addition, characteristics of habitat integrity (such as water quality, channel processes, sediment regime, instream flows, and riparian vegetation), were considered in relation to the proposed alternatives.

Potential environmental consequences to aquatic species and habitats from the prohibitions and permissions in the alternatives were determined by considering the kinds and numbers of species potentially affected; identifying the important and sometimes unique characteristics of roadless areas that foster biodiversity; and evaluating the potential effects of road construction, road reconstruction, timber cutting and discretionary minerals activities on those characteristics. These effects are discussed for aquatic species and habitats.

CONSULTATION AND COORDINATION

National Oceanic and Atmospheric Administrations (NOAA), National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (FWS) have oversight responsibilities for implementation of the ESA. Informal consultation and conferencing

⁴⁴ Other Idaho aquatic species of greatest conservation need are not specifically included in this analysis and encompass a variety of organisms including mollusks, insects, amphibians, and fish. The species included in this analysis (appendix L, table 1) serve as a surrogate for this larger group of cold-water species. The cold-water group requires stream environments that have clean, cold water. Salmonid species are considered useful surrogates for aquatic invertebrates. Lee et al. (1997) in the Interior Columbia Basin assessment provided several reasons for focusing on salmonid species as cold-water biota indicators. These include:

- More is known about them and therefore we are more likely to discern important environmental relationships;
- They are widely distributed, which allows for broad-scale comparisons;
- They act as predators, competitors, and prey for a variety of other aquatic and terrestrial animals, so they are likely to influence the structure and function of aquatic ecosystems.
- They are potentially more sensitive to disturbance than other species groups.

on the proposed rule have begun with frequent discussions among Forest Service, FWS, and NMFS biologists. The Agency intends to prepare a biological assessment on the proposed rule and informally consult with the FWS and NMFS.

AFFECTED ENVIRONMENT

The State of Idaho contains numerous rivers, streams, and lakes. Most of Idaho is included in the Interior Columbia River Basin with the exception of the Bear River Basin, in southeast Idaho. Bear River Basin is part of the Great Basin and flows into the Great Salt Lake. Idaho Roadless Areas support a diversity of aquatic habitats and communities, including habitat for 17 aquatic TES species (appendix L, table L-1) and numerous other native aquatic species including fish, amphibians, and invertebrates.

The Columbia Basin fisheries in Idaho are world-renowned for their salmon, steelhead, and native trout populations. The Bear River Basin, including Bear Lake and its tributaries, support several endemic species, including Bonneville cisco, Bonneville whitefish, Bear Lake whitefish, and Bear Lake sculpin. In addition, the fisheries resources of the State are important for the Tribes in Idaho. Most of the native fish populations in Idaho have suffered declines. Similarly, native amphibians such as the Coeur d'Alene salamander, western toad, and Columbia spotted frog have also experienced population declines.

Human activities since the late 1800s have altered some of the landscape across Idaho. Clearing of streams for passage of boats and milling of logs downstream reduced habitat complexity and the connection between streams and their floodplains. Dams and diversions resulted in dramatic changes to stream conditions and the passage of aquatic species upstream and downstream. Ground-disturbing activities such as mining, road building, and logging have resulted in higher sediment loading to streams and channel alterations that often times resulted in unfavorable conditions for aquatic species (Meehan 1991). In the Interior Columbia Basin (including most of Idaho), the ecological integrity of streams, lakes, and wetlands was significantly compromised by the late 1920s (Lee et al. 1997). Increasing human population, technological advances (for example, centrifugal pumps), and availability of heavy equipment after World War II greatly accelerated the development of new irrigation projects, timber harvest, dam construction, and road building (Lee et al. 1997). Individually and in combination, these activities continued to fragment and compromise the remaining hydrologically connected and vegetated reaches of streams (Lee et al. 1997).

Features of altered ecosystems include changes (generally reductions) in species diversity, changes in species distributions, and losses of habitat types or ecosystem status (Reeves et al. 1995). Native salmonid assemblages are simplified in watersheds that have been affected by various human activities (Reeves et al. 1995). Large blocks of unroaded areas such as Idaho Roadless Areas may support isolated aquatic populations because of road-related effects and other causes of habitat alteration in adjacent areas (USDA 2000).

Aquatic Ecosystems

Approximately 32 percent of Idaho is roadless, including congressionally mandated wilderness (7 percent), NFS roadless areas (18 percent), and BLM roadless (7 percent). The 9.3 million acres of Idaho Roadless Areas play an important role in the condition of aquatic ecosystems and aquatic species across the State.

Key aquatic ecological characteristics that contribute to aquatic/riparian ecosystem integrity include (USDA et al. 1993 [FEMAT], Furniss et al. 1991):

- Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geographic region;
- Habitat to support diversity and productivity of native and non-native plant, vertebrate, and invertebrate populations that contribute to the viability of aquatic- and riparian-dependent communities;
- Habitats and conditions that discourage and prevent the establishment and spread of invasive species;
- Water quality, including temperature, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which riparian and aquatic ecosystems developed;
- Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- Natural timing and variability of the water table elevation in meadows and wetlands;
- Riparian vegetation to:
 - Provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
 - Provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
 - Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

These characteristics are becoming more valuable in an increasingly developed landscape. Large undisturbed landscapes generally have high ecological characteristics contributing to aquatic riparian ecosystem integrity. Idaho contains more wild and remote public land than any State outside of Alaska (Curley et al. 2006).

Waters in Idaho Roadless Areas have been shown to function as biological strongholds and refuges for many fish species (Lee et al. 1997). Smaller streams, such as many of those found in roadless areas, provide important habitat for resident and migratory

aquatic species and also influence the quality of habitat in larger, downstream reaches (Chamberlin et al. 1991).

Strong fish populations that include the most productive, abundant and diverse populations are likely to be most resilient to environmental disturbance and most likely to survive and recover from catastrophic disturbance (Rieman et al. 1993). Idaho Roadless Areas provide for aquatic species strongholds and opportunities to better understand aquatic and riparian ecosystems that have experienced minimal disturbance. Strong populations of native fish are critical for short-term persistence and long-term recovery.

Biodiversity

In the ecological literature, diversity refers to both the number of species present and their relative abundance. Thus, an area with many abundant species is more “diverse” than an area with an equal number of species, few of which are abundant and most of which are rare. A relative measure of Idaho’s aquatic biodiversity is shown in table 3-31.

Table 3-31. Idaho’s biodiversity rank relative to the 50 United States and the District of Columbia (Stein 2002)

Category	Rank	Number of species or percent at risk
Amphibian diversity	48	12 species
Amphibian risk	19	8.3 percent at risk
Freshwater fish diversity	47	42 species
Freshwater fish risk	10	19.0 percent at risk

The number of native species present in a watershed is an important element of diversity and reflects heterogeneity in the physical environment (Lee et al. 1997). A high degree of species overlap might reflect strong habitat diversity. Even with a fairly narrow group like salmonids, each species relies on different habitats and environments, with variable and wide-ranging life-history patterns. The co-occurrence of several salmonids suggests suitable habitats exist over relatively large landscapes, not just those tied to the local subwatershed. High richness may also indicate critical common areas that serve as corridors, wintering areas, or seasonal refuges for the varied life histories in the assemblage. The loss of such areas could portend a loss of richness on both local and regional scales.

The size of an area, kinds and intensity of management-induced and natural disturbances that have occurred, and the landscape context in which it is found, all affect the quality, distribution, and extent of these habitats. Some of these waters may now play a relatively much greater role in supporting aquatic species and biodiversity than in the past due to cumulative loss of other, potentially more biologically rich habitat within associated drainages.

ESA Threatened and Endangered Species

Federally listed threatened and endangered aquatic species that occur in Idaho include steelhead, spring/summer-run Chinook salmon, fall-run Chinook salmon, bull trout, sockeye salmon, and white sturgeon (Kootenai River system) (table 3-32).

Two documents guide the management of these six federally listed fish species on National Forest system lands: (1) Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (USDA Forest Service, USDI BLM 1995); and (2) Inland Native Fish Strategy (INFISH) (USDA Forest Service 1995). PACFISH and INFISH standards and guidelines apply to all NFS lands within the analysis area.

Table 3-32. Acres of threatened and endangered fish species range in Idaho and percent overlap with Idaho Roadless Areas

Species	Acres of species range in Idaho	Percent of species range that overlaps Idaho Roadless Areas
Steelhead	11,533,600	27
Spring/summer-run Chinook	10,512,800	28
Fall-run Chinook	790,400	5
Bull trout	16,746,200	33
Sockeye	1,655,700	21
Kootenai white sturgeon	167,800	10

The following threatened and endangered fish species information is from the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005).

Steelhead trout. Steelhead, which are the anadromous life form of rainbow/redband trout, were historically found along the west coast of North America from southern California to central Alaska. The Interior Columbia River basin steelhead ranged from east of the Cascades upstream in the Columbia River and tributary streams to natural geologic barriers such as Shoshone Falls on the Snake River (Behnke 2002). In Idaho, steelhead had access to most of the Clearwater, Salmon, Weiser, Payette, Boise, Owyhee, Bruneau, and Salmon Falls Creek drainages. Populations using the tributaries above Hells Canyon Dam were eliminated with the construction of the Hells Canyon complex in the 1950s and earlier upriver dams. Currently, wild and hatchery steelhead are found in the Snake River below Hells Canyon Dam, in the Clearwater, and Salmon River drainages. Steelhead in the Snake River drainage were listed as threatened under ESA in 2006 (U.S. Department of Commerce [USDC] NOAA 2006). About 100 roadless areas in Idaho have habitat that supports steelhead trout.

Steelhead spawn and rear in streams and small-river habitats that are similar to habitats in slightly larger systems used by resident rainbow/redband trout. Spawning streams need clean gravels for successful egg development and fry emergence. Most steelhead returning to Idaho cross Lower Granite Dam during September-November and overwinter in pools before spawning the next spring. Steelhead remain in the ocean for 1–3 years before returning to natal streams to spawn.

Snake River spring/summer-run Chinook salmon. Snake River spring/summer-run Chinook salmon historically were found spawning in the Snake River tributaries of the Clearwater, Salmon, Weiser, Payette, and Boise rivers. Populations using the rivers above Hells Canyon Dam were eliminated with the construction of Hells Canyon complex from 1955 to 1967 and earlier upriver dams. Populations in the Clearwater drainage were eliminated or severely depressed by the Lewiston Dam in the 1950s. The Idaho portion of the Snake River spring/summer-run Chinook salmon evolutionary significant unit (ESU) consists of all the Salmon River drainage and the Snake River drainage upstream to Hells Canyon Dam. The Clearwater drainage was not included because this population was lost in the 1950s. Although not listed in the ESU, the reestablished Clearwater River populations have been considered as part of the historical range. About 100 roadless areas in Idaho have habitat that supports spring/summer-run Chinook salmon.

Spring/summer-run Chinook salmon for the Snake and Salmon River sub-basins were listed as threatened under ESA on April 22, 1992 (USDC NOAA 1992; see also correction June 3, 1992); threatened status was reaffirmed on June 28, 2005 (USDC NOAA 2005a). Chinook salmon are the largest of any salmon, with adults often exceeding 40–60 pounds after 3–5 years in the ocean. Spring/summer Chinook salmon use smaller, higher elevation tributary systems for spawning and juvenile rearing compared to fall-run Chinook salmon, which spawn in mainstem larger rivers. As with most salmon, adults die after spawning, providing a large nutrient source for juvenile fish. Juvenile spring/summer-run Chinook salmon remain in headwater streams for a year and out-migrate the following spring.

Snake River fall-run Chinook salmon. Historically, Snake River fall-run Chinook salmon spawned in the Snake River upriver to the Hagerman Valley and in lower portions of the Salmon and Clearwater Rivers. Populations using the river above Hells Canyon Dam were eliminated with the construction of the Hells Canyon complex from 1955 to 1967 and earlier upriver dams. The Idaho portion of the Snake River fall-run Chinook salmon ESU consists of the Clearwater drainage up to Lolo Creek except for the North Fork above Dworshak Dam; the Salmon River drainage upstream to the Little Salmon River; and the Snake River drainage upstream to Hells Canyon Dam. Fall-run Chinook salmon for the Snake and Salmon River sub-basins were listed as threatened under ESA on April 22, 1992 (USDC NOAA 1992; see also correction June 3, 1992); threatened status was reaffirmed on June 28, 2005 (USDC NOAA 2005a). The John Day, North Fork Slate Roadless Area on the Nez Perce National Forest; the Hells Canyon/7 Devils Scenic, Patrick Butte Roadless Areas on the Payette National Forest; and the Big Canyon ID, Klopton Creek-Corral Creek ID Roadless Areas on the Wallowa-Whitman National Forest have habitat supporting fall Chinook salmon.

Fall-run Chinook salmon use the mainstem of larger rivers to spawn compared to spring/summer-run Chinook salmon, which spawn in smaller, higher tributary streams. Adult fall-run Chinook salmon enter the Snake River from late August through November. Fry emerge in March and juvenile fall-run Chinook salmon typically differ

from spring/summer-run fish in that they begin a slow downstream migration as subyearlings soon after emerging from the gravel, feeding on their way to the ocean. Most complete the journey in the first year.

Bull trout. Bull trout occur in the northwestern portion of North America from Nevada to the Yukon Territory (Behnke 2002). Because of concerns about declining population numbers of bull trout in some areas of their range and lack of information in other areas, the FWS listed the species as threatened in 1998 in the Columbia River basin (USDI FWS 1998). Idaho contains approximately 48 percent of the stream miles and 39 percent of the lakes and reservoirs for this species (Reighn 2007, pers. comm.). Although Idaho contributes to a significant portion of the occupied habitat for bull trout, the populations in Idaho have declined severely (46 percent) within their historical range in the State. About 170 roadless areas in Idaho have habitat that supports bull trout.

In Idaho, bull trout are currently found in the Boise, Payette, and Weiser drainages, and all the drainages to the north in the Columbia River basin. There is a small isolated population remaining in the Jarbidge drainage to the south of the Snake River and the Little Lost River. There are no roadless areas associated with the Jarbidge drainage.

Bull trout exhibit three life history types in Idaho – adfluvial, fluvial, and resident – all of which require cold water temperatures, less than 16°C (less than 60°F), during portions of their life cycle to persist. Bull trout generally prefer colder water temperatures, less than 12°C (less than 54°F), than other trout species found in Idaho.

Sockeye salmon. In Idaho, sockeye salmon historically spawned and reared in the large lakes accessible to the ocean (Payette and Salmon River drainages). The Payette Lake population was eliminated in the early 1990s by dam construction on the Payette River. Currently sockeye salmon are found only in lakes in the Stanley basin of the upper Salmon River, primarily Redfish and Alturas Lakes. Sockeye salmon in the Snake River basin are an anadromous species, which have life history patterns that depend on the fresh water lakes and access to the ocean; they migrate to and from the ocean through the Salmon, Snake, and Columbia Rivers.

Sockeye salmon spawn in gravel areas in lakes, where juveniles rear for 1 to 3 years prior to migrating to the ocean. Sockeye salmon in the Snake River drainage were listed as endangered under ESA in 1991 (USDC NOAA 1991). At the time of listing, the Snake River sockeye salmon ESU was limited to Redfish Lake but enhancement has increased distribution to Alturas and Pettit Lakes. Idaho Roadless Areas that are located in the Redfish Lake, Alturas Lake, and Pettit Lake basins include: Hanson Lakes, Huckleberry, and Pettit Roadless Areas on the Sawtooth National Forest.

Kootenai River white sturgeon. The white sturgeon occurs in large rivers in the Pacific Northwest from central California to southwest Alaska. The Kootenai River population has been geographically isolated from other populations since the last ice age. The population ranges from Kootenay Lake in British Columbia up to the Kootenai River through Idaho to Kootenai Falls in Montana. The Kootenai River population was listed as endangered in 1994 (USDI FWS 1994). The white sturgeon is the largest freshwater

fish in North America. The Katka Peak, Mt. Willard, Lake Estelle, and Selkirk Roadless Areas on the Idaho Panhandle National Forest overlap habitat for the Kootenai River white sturgeon.

Species Richness

The total number of aquatic threatened and endangered fish species known to occur in each Idaho Roadless Area was used to characterize species richness within a roadless area. There are 170 roadless areas that are within the range for aquatic threatened and endangered species (appendix L, table L-3). Idaho Roadless Areas with the greatest overlap of threatened and endangered fish species are especially valuable for their species richness and contribution to biodiversity. Nine roadless areas overlap with four threatened and endangered species (table 3-33); 88 roadless areas overlap with three aquatic species; 6 roadless areas overlap with two species; and 69 roadless areas overlap with one species. Figure 3-14 shows Idaho Roadless Areas that provide habitat for multiple (1-4) threatened and endangered aquatic species.

Table 3-33. Idaho Roadless Areas that provide habitat for multiple (four) threatened and endangered fish species

Idaho Roadless Area	Forest
Hanson Lakes	Boise/Challis/Sawtooth
John Day	Nez Perce
North Fork Slate Creek	Nez Perce
Hells Canyon/7 Devils Scenic	Payette
Patrick Butte	Payette
Huckleberry	Sawtooth
Pettit	Sawtooth
Big Canyon ID	Wallowa-Whitman
Klopton Creek – Corral Creek ID	Wallowa-Whitman

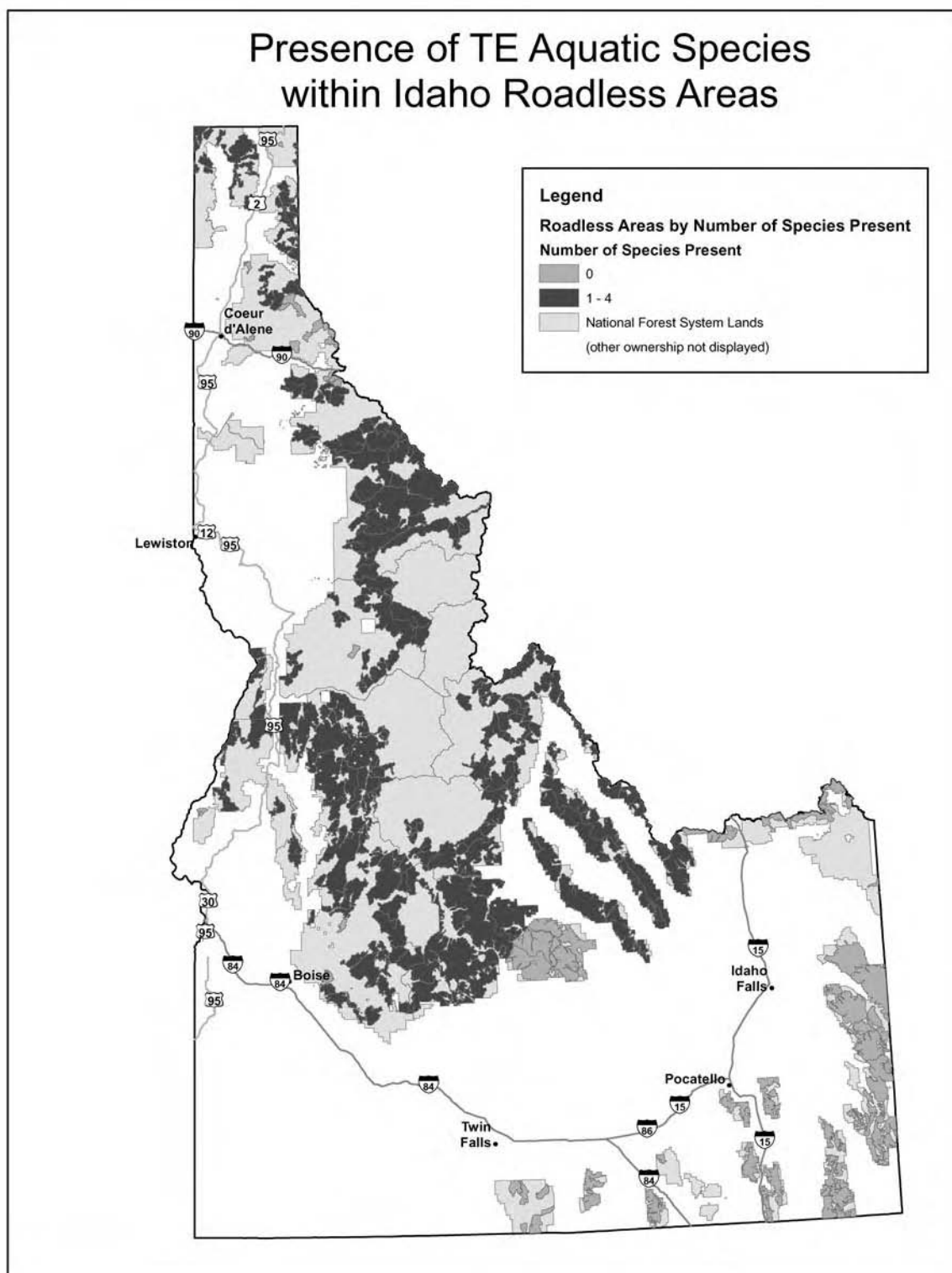


Figure 3-14. Idaho Roadless Areas that provide habitat for multiple (1-4) threatened and endangered aquatic species.

Critical Habitat

Critical habitat has been designated for all the threatened and endangered fish species. Snake River steelhead critical habitat was designated and mapped by NOAA Fisheries (USDC NOAA 2005b).⁴⁵ Sockeye critical habitat is limited to Redfish Lake and the main stem Snake River (USDC NOAA 2005b). Kootenai River white sturgeon critical habitat was designated and mapped by the FWS (USDI FWS 2006). Critical habitat has been designated for bull trout (USDI FWS 2005); however, none is designated on NFS lands. Table 3-34 displays critical habitat for Idaho threatened and endangered fish species in Idaho Roadless Areas.

Table 3-34. Threatened and endangered fish critical habitat in Idaho Roadless Areas

Species	Acres of Idaho Roadless Area providing critical habitat	Percent critical habitat in Idaho Roadless Areas
Steelhead	3,433,000	28
Chinook salmon	3,433,000	28
Bull trout	0	0
Sockeye	347,700	21
Kootenai River white sturgeon	7,000	7

Priority Watersheds

Priority watersheds (also called “special emphasis” or “key” watersheds) are areas that provide for high-quality habitat and stable populations of listed fish species. Priority watersheds are a cornerstone of most species conservation strategies (Lee et al. 1997). The goal of these watersheds is to maintain the best habitats and fish populations, and generally watersheds are chosen that have the highest potential for rehabilitation. Priority watersheds have been identified for Chinook, steelhead, and bull trout.

Of the Idaho Roadless Areas, 57 percent contain priority watersheds identified for conservation of threatened and endangered fish species, including steelhead, spring-summer Chinook salmon, and bull trout. In Idaho, no priority watersheds are designated for fall-run Chinook. More than 40 percent of the acreage in designated priority watersheds for these aquatic species is located in roadless areas. Table 3-35 displays percent of priority watersheds in Idaho Roadless Areas by species.

Table 3-35. Threatened and endangered fish priority watersheds in Idaho Roadless Areas

Fish Species	Percent of priority watersheds in Idaho Roadless Areas
Steelhead trout	28
Chinook salmon	39
Bull trout	44

⁴⁵ NOAA Fisheries (Chamberlin 2007, pers. com.) gave instructions to use the steelhead map for spring/summer-run and fall-run Chinook salmon critical habitat because the steelhead map also includes the current and historically accessible habitat for Chinook.

Several of the threatened and endangered fish priority watersheds contribute to species richness by providing habitat for several of the species. Of the roadless areas that contain priority watersheds, 15 provide priority watershed areas for all three species (steelhead trout, Chinook salmon, and bull trout) (table 3-36). About 50 roadless areas are priority watersheds for two species. These roadless areas provide important habitat for multiple species and are of very high value to aquatic biodiversity.

Table 3-36. Idaho Roadless Areas that provide priority watershed areas for steelhead, Chinook salmon, and bull trout

Idaho Roadless Area	Forest
Challis Creek	Challis
Loon Creek	Challis/Sawtooth
Dixie Summit - Nut Hill	Nez Perce
East Meadow Creek*	Nez Perce
John Day	Nez Perce
Little Slate Creek	Nez Perce
Little Slate Creek North	Nez Perce
Mallard	Nez Perce
North Fork Slate Creek	Nez Perce
Salmon Face	Nez Perce
West Meadow Creek*	Nez Perce
Rapid River	Nez Perce/Payette
Camas Creek	Salmon/Challis
Lemhi Range	Salmon/Challis
Taylor Mountain	Salmon/Challis

**Note: East Meadow Creek Roadless Area and West Meadow Creek Roadless Area function as a complex because they are located on either side of the Meadow Creek drainage. Both have equal influence on Meadow Creek aquatic resources.*

Fish Strongholds

Fish strongholds were identified in the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) assessment (Lee et al. 1997) for seven key native salmonids including: steelhead, Chinook spring/summer-run, Chinook fall-run, bull trout, redband trout, westslope cutthroat trout, and Yellowstone cutthroat trout. ICBEMP salmonid strongholds are directly associated with strong populations. In Idaho, there are no ICBEMP strongholds identified for either spring/summer-run or fall-run Chinook salmon. Strongholds identified in Idaho for the five remaining salmonid species are used in this analysis.

Strong populations have the following characteristics:

1. All major life-history forms (for example, resident, fluvial, adfluvial) that historically occurred within the watershed are present;
2. Numbers are stable or increasing and the local population is likely to be at half or more of its historical size or density; and

3. The populations or meta-population within the watershed, or within a larger region of which the watershed is a part, probably contains at least 5,000 individuals or 500 adults.

Both fish strongholds and priority watersheds are valuable for their contribution to conservation and recovery of species and their habitats. Even small areas can contribute significant value depending on their location and contribution to interconnecting populations, providing for a larger meta-population, distance to a source population and contribution to genetic and phenotypic diversity.

A substantial amount of Idaho Roadless Areas (23 percent) provides important habitat for these five key salmonids. In Idaho, 32 percent of the strong populations for these species are in roadless areas. Acres of Idaho Roadless Areas contributing to Idaho fish strongholds by species are shown in Table 3-37.

Table 3-37. Idaho Roadless Areas contributing to fish strongholds (acres)

Fish species	Idaho Roadless Area acres contributing to fish strongholds
Bull trout	453,500
Redband trout	660,300
Steelhead trout	54,000
Yellowstone cutthroat trout	279,400
Westslope cutthroat trout	915,000

ICBEMP fish strongholds for bull trout, redband trout, steelhead, Yellowstone cutthroat trout, and westslope cutthroat trout overlap about half of the roadless areas, with 33 roadless areas providing strongholds for multiple species (appendix L, table L-4).

Forest Service Sensitive Species

Forest Service aquatic sensitive species within the analysis area include both fish and amphibians. All the Forest Service aquatic sensitive species have some overlap with Idaho Roadless Areas (table 3-38).

Table 3-38. Percentage of sensitive species range that overlaps with the Idaho Roadless Area

Sensitive species (Forest Service region)	Percent of species range that overlaps Idaho Roadless Areas
Fish	
Bonneville cutthroat trout (R4)	23
Burbot (R1)	12
Inland redband trout (R1)	21
Pacific lamprey (R1)	19
Chinook salmon (naturalized populations) (R1)	18
Fine-spotted Snake River cutthroat trout [Yellowstone cutthroat trout] (R4)	23
Westslope cutthroat trout (R1 and R4)	28
Wood River sculpin (R4)	25
Amphibians	
Coeur d'Alene salamander (R1)	27
Columbia spotted frog (R4)	20
Western toad (R1)	90
<i>R1=Northern Region; R4=Intermountain Region</i>	

Several roadless areas are within the range of several sensitive species. These areas of species richness are displayed in table 3-39 and appendix L, table L-5. Areas of multiple species overlap are important for species conservation and biodiversity.

Table 3-39. Idaho Roadless Areas that have seven aquatic sensitive species (amphibians and fish)

Idaho Roadless Area	Forest
Bighorn - Weitas	Clearwater
Lochsa Face	Clearwater
North Lochsa Slope	Clearwater
O'Hara - Falls Creek	Nez Perce
Rackliff - Gedney	Clearwater/Nez Perce
Silver Creek - Pilot Knob	Nez Perce
Weir - Post Office Creek	Clearwater
West Meadow Creek	Nez Perce

Management Indicator Species

Rainbow trout is a MIS on the Idaho Panhandle National Forest only (appendix L, table L-2). The range of rainbow trout overlaps with 600,900 acres of the roadless areas on the Idaho Panhandle National Forest. This overlap equals about twenty eight percent of the total range for rainbow trout on the Idaho Panhandle National Forest.

ENVIRONMENTAL CONSEQUENCES

Roads. Road construction/reconstruction, maintenance, use, and even the presence of roads in a watershed can have numerous adverse effects on aquatic ecosystems and the species they support. Recent changes in road designs and application of best management practices have been effective in some instances at moderating or avoiding many adverse effects. The discussion in this section captures the principal effects that have been associated with roads, but these are potential effects; furthermore, not every road would necessarily exhibit each or even many of these effects. Also, the effects of roads may vary with physical and biological conditions and the physical location of the road (Luce et al. 2001). The Physical Resources section provides a discussion of potential geomorphic and hydrologic effects of roads on watershed and stream channel conditions.

Potential effects from roads on aquatic habitat include (Furniss et al. 1991, USDA Forest Service 2000h):

- Increasing sediment loads in streams;
- Modifying watershed hydrology and stream flows;
- Altering stream channel morphology;
- Increasing habitat fragmentation and loss of connectivity;
- Reducing water quality, including increasing chance of chemical pollution; and
- Altering water temperature regimes.

These physical alterations can potentially result in a variety of adverse effects on aquatic species including:

- Increased mortality of amphibians, from crushing;
- Loss of spawning and rearing habitat, and deep pools, from excess sediment deposition;
- Increased mortality of eggs and young from lower levels of oxygen in stream gravels;
- Increased susceptibility to disease and predation;
- Increased reproductive failure;
- Shifts in macro invertebrate communities to those tolerating increased sediment or other types of diminished water quality;
- Increased susceptibility to over harvest and poaching;
- Loss of protective cover and resting habitat through changes in channel structure including large woody debris, overhanging banks, and deep pools;
- Competition from nonnative species;

- Loss of habitat caused by habitat reduction, barriers to passage, increased gradient, high temperatures, and other factors; and
- Increased vulnerability of subpopulations to catastrophic events and loss of genetic fitness, related to loss of habitat connectivity.

Timber Cutting. The effects of activities associated with timber cutting (such as tree felling, yarding, landings, site preparation by burning or scarification, fuels reduction, brush removal and whip felling, and forest regeneration) are often difficult to separate from the effects of roads and road construction. The road systems developed to cut timber are often a significant factor affecting aquatic habitats, as discussed above.

Negative effects from timber cutting tend to increase when activities occur on environmentally sensitive terrain with steep slopes composed of highly erodible soils (Lee et al. 1997). Some of the potential effects on aquatic habitat can include the following (Chamberlin et al. 1991, Hicks et al. 1991, Beschta et al. 1987):

- Increasing erosion;
- Increasing sediment supply and storage in channels;
- Modifying watershed hydrology and streamflow, including the timing or magnitude of runoff events;
- Decreasing stream bank stability, and altering stream channel morphology;
- Changes in water quality and quantity;
- Decreased recruitment of large woody debris to aquatic habitats;
- Diminishing habitat complexity;
- Altering energy relationships involving water temperature, snowmelt, and freezing; and
- Altering riparian composition and function.

If present, these physical changes in habitat would have many of the same biological effects as previously listed under the effects of roads, above. With the recent increased emphasis on use of best management practices and other protective measures in the design and implementation of timber cutting activities, the effects can often be mitigated to some extent. Cumulatively, however, timber cutting activities within a watershed can have pronounced and lasting effects on aquatic habitat (Chamberlin et al. 1991).

Mineral Activities. Idaho Roadless Areas contain saleable, leasable, and locatable mineral resources. Mining for these materials occurs as surface mining or underground mining. Although any mining activity may have negative effects on aquatic ecosystems, the largest impacts have generally been associated with surface mining (Lee et al. 1997).

Mining activities can affect aquatic ecosystems in a number of ways: through the addition of large quantities of sediments, the addition of solutions contaminated with

metal or acids, the acceleration of erosion, increased bank and streambed instability, changes in channel formation and stability, and removal of riparian vegetation (Lee et al. 1997).

In general, surface mining causes higher stream flows and greater storm flow volumes than underground mining because of a greater amount of surface area disturbance with associated removal of vegetation and topsoil, greater amounts of spoils, and general compaction of the area (Southern Appalachian Man and the Biosphere 1996c). Stream channels can adjust to increased flows and sediment loads; however, such alterations can have adverse effects on the quality of aquatic habitat.

Sediments can enter streams through erosion of mine tailings (Besser and Rabeni 1987), by direct discharge of mining wastes to aquatic systems, and through movement of groundwater (Davies-Colley et al. 1992). Coarse sediments delivered to channels are likely to be deposited relatively quickly, affecting nearby aquatic habitat. Finer materials settle out more slowly and may create turbid water conditions for long distances downstream, affecting primary production and biomass by reducing the amount of light available to algae and rooted aquatic plants (Lee et al. 1997). Increases in turbidity can cause direct mortality to aquatic species, reduce growth and feeding activity (Nelson et al. 1991), and affect the abundance and diversity of benthic invertebrates (Lee et al. 1997). Excessive fine sediment deposition in stream substrates can degrade spawning habitat for salmonids and eliminate habitat for some bottom-dwelling aquatic species by filling in spaces in gravels (Nelson et al. 1991).

Of particular concern to aquatic resources in Idaho is selenium contamination resulting from phosphate mining. Selenium contamination has occurred world-wide in association with common and economically important activities such as fossil fuel processing, mining, and irrigation, resulting in dozens of cases in which fish and wildlife populations have been affected (Van Kirk and Hill 2006). The southeast Idaho phosphate mining region, which includes the Caribou National Forest, is one of the most extensive and productive phosphate fields in the world (Jasinski et al. 2004). The bioaccumulative nature of selenium in aquatic systems is well-documented (Presser et al. 1994, Dobbs et al. 1996, Maier et al. 1998, Garcia-Hernandez et al. 2000, Hamilton 2002). Documented individual-level effects of selenium in fish include decreased egg incubation period, hatch rate, pre-swim-up fry survival, post-swim-up fry survival, juvenile winter survival, juvenile growth, adult survival, and adult growth (Van Kirk and Hill 2006). Modeling results from Van Kirk and Hill (2006) concluded that decreased juvenile survival in cutthroat trout due to selenium toxicity could result in decreased population size.

Extent and Duration of Effects. For aquatic habitats, the indirect effects of disturbances associated with road construction and timber cutting could extend well beyond those areas directly affected, given the influence that upslope areas and upstream reaches have on the condition of downstream habitat (Chamberlin et al. 1991). The types and extent of impacts on aquatic habitats would depend on road location and design,

proximity to accessible habitat, mitigation measures applied, and the activities enabled. For fish populations, habitat alterations can adversely affect all life-stages, from egg to adult, and habitat essential for migration, spawning, incubation, emergence, rearing, feeding, and security (Furniss et al. 1991).

The duration of effects, or recovery time, depends on a variety of factors. Site productivity, rainfall, and length of growing season influence the rate and success of vegetation regrowth. Some of the other factors influencing the duration of physical effects on a watershed and associated stream channels include: the type, location, extent, and duration of an activity; magnitude of adverse effects; dominant hydrologic and geomorphic processes within the watershed; overall watershed condition; and the effectiveness of mitigation and reclamation activities. The duration of biological effects can extend beyond the recovery time for the physical environment and can be irreversible if a species is extirpated from the watershed.

All Alternatives

None of the alternatives would prohibit road construction or reconstruction associated with developing existing mineral leases. About 1,100 acres of phosphate within existing lease areas (Smoky Canyon Mine) are reasonably foreseeable for development. Mine expansion is expected to occur within Sage Creek and Meade Peak Roadless Areas under each alternative. No threatened or endangered species occur within the Sage Creek or Meade Peak Roadless Areas; however, the Sage Creek Roadless Area is within the range of the sensitive Snake River fine spot cutthroat and the Meade Peak Roadless Area is within the range of the sensitive Snake River fine spot cutthroat and Bonneville cutthroat trout. Both the Sage Creek and Meade Peak Roadless Areas are considered strongholds for Yellowstone cutthroat trout. An additional 8,000 acres under existing lease, within the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson Roadless Areas could also be developed sometime in the future (50 or more years).

Any future phosphate development could affect aquatic ecosystems in a number of ways: through the addition of large quantities of sediments, the addition of solutions contaminated with metal or acids, the acceleration of erosion, increased bank and streambed instability, changes in channel formation and stability, and removal of riparian vegetation (Lee et al. 1997). Any future development would undergo environmental analysis, and environmental mitigations would be required to lessen effects.

2001 Roadless Rule (No action)

The 2001 Roadless Rule prohibits road construction/reconstruction except when done under seven exceptions. About 15 miles of road are projected to be constructed/reconstructed in Idaho Roadless Areas over the next 15 years. The 2001 Roadless Rule allows some timber cutting for ecosystem restoration and hazardous fuel reduction purposes. No road construction is permitted to support timber cutting for

these purposes. Timber cutting is projected to occur on about 1,500 acres over the next 15 years.

By restricting timber harvest to activities necessary for resource stewardship and prohibiting new road construction (in most cases), many of the adverse effects of timber harvest would be minimized, while maintaining a management tool potentially needed for ecological restoration. Fuels reduction stewardship activities within a watershed may be indirectly beneficial to some aquatic populations. For example, careful thinning to reduce fuel loading in some areas where there is an abnormally high risk of high intensity, large-scale fires, may lower the risk of extirpation of an isolated fish population from a wildfire, particularly where habitat complexity and spatial diversity have already been diminished, and where fish would have difficulty in repopulating because of lack of habitat connectivity.

Based on foreseeable projections, most timber cutting activities are not likely to affect the overall amount or severity of wildfires. As a result, the effects of wildfires on aquatic species are likely to be similar with or without the prohibitions. Whereas the benefits of less ground disturbance from road construction and timber cutting are well-documented in the literature, it is less clear whether failure to reduce fuel loading would constitute a substantially increased level of risk for aquatic communities.

Aquatic habitat management activities that are not dependent on new or reconstructed road access could be implemented under the 2001 Roadless Rule. Overall, the need for additional road access to manage aquatic habitat within Idaho Roadless Area appears to be minimal. This alternative would not measurably affect the current ability to manage aquatic habitat. In general aquatic habitats and species would benefit from the prohibitive nature of this alternative. All Idaho Roadless Areas would be managed under a similar set of guidelines that are fairly restrictive in relation to road construction/reconstruction, timber cutting, and discretionary minerals activities.

Summary of effects. No adverse environmental effects to aquatic animal species or their habitat would be expected under the 2001 Roadless Rule because it does not directly authorize any ground-disturbing activities. Ground-disturbing activities permitted include very limited road construction/reconstruction and very limited timber cutting across the entire 9.3 million acres of Idaho Roadless Areas. There would be limited to no effect on aquatic species or their habitats, species richness, critical habitat, priority watersheds, fish strongholds. There would be no adverse effects on species richness, critical habitat, priority watersheds, or fish strongholds. Overall, the effects on fish habitat and fish species would be beneficial because of the limited amount of disturbance permitted in roadless areas.

Existing Plans

Under Existing Plans road construction/reconstruction, timber cutting and discretionary mineral activities are generally not allowed on about 3.45 million acres of land within Idaho Roadless Areas (37 percent of the roadless areas). These areas would

continue to provide excellent habitat for aquatic species because of the limited amount of human-induced disturbance. About 4.24 million acres are in management prescriptions similar to Backcountry and generally some level of road construction/reconstruction would be permitted, as well as timber cutting.

Discretionary mineral activities may or may not be permitted depending on the forest plan direction (appendix B). About 1.26 million acres are in prescriptions similar to the GFRG theme. Road construction/reconstruction, timber cutting and discretionary mineral activities are generally permitted in these areas.

The amount of Idaho Roadless Areas within the GFRG theme and overlapping four threatened and endangered species, priority watersheds for three species, or large strongholds is limited (table 3-40 and appendix L, table L-6). More acres of these indicators overlap the management prescription similar to the Backcountry theme (table 3-40). Projected road construction and reconstruction in Idaho Roadless Areas under the Existing Plans is 180 miles over the next 15 years, about half of which would likely be in the form of temporary roads or would be reconstruction. This estimate includes both permanent and temporary roads for timber cutting and non-timber related activities. Timber cutting is projected to occur on about 42,000 acres over the next 15 years. These activities could reduce the quality and quantity of fish habitat in some roadless areas, with increased potential for adverse effects on some threatened, endangered or sensitive (TES) species. However, all activities would be done under the management direction of Existing Plans, most of which provide specific guidance (such as PACFISH and INFISH) to reduce adverse effects to TES species.

Table 3-40. Acres by theme, Existing Plans and the Idaho Roadless Rule overlapping important TES habitat

	Wild Land Recreation	Primitive	Backcountry	GFRG	Forest plan special areas ¹	SAHTS
Acres by allocation						
Existing plans	1,320,400	2,131,400	4,244,500	1,262,400	345,100	0
Idaho Roadless Rule	1,378,600	1,656,300	5,246,100	609,500	345,100	68,600
Acres in Idaho Roadless Areas overlapping 4 threatened and endangered species						
Existing Plans	28,700	60,300	126,700	14,900	17,700	0
Idaho Roadless Rule	28,700	60,300	141,600	0	17,700	0
Acres in Idaho Roadless Areas overlapping priority watersheds for 3 species						
Existing Plans	0	126,200	700,600	154,500	15,400	0
Idaho Roadless Rule	0	164,700	770,700	0	15,400	0
Acres in Idaho Roadless Areas overlapping large strongholds or strongholds for multiple fish species						
Existing Plans	813,500	1,121,200	1,945,500	132,000	151,600	0
Idaho Roadless Rule	858,700	1,053,600	2,343,500	5,400	151,600	46,700

¹ Management direction under the Idaho Roadless Rule would not apply to forest plan special areas such as research natural areas, wild and scenic rivers, developed sites, etc. (appendix H, table H-9).

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. The known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the forest within the Bald Mountain, Bear Creek, and Poker Creek roadless areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased.

No threatened or endangered aquatic species occur in the unleased phosphate roadless areas. Bonneville cutthroat trout, an R4 sensitive species, and several sensitive amphibians are located in some of these roadless areas. There is a potential risk to sensitive aquatic species and their habitats on these 13,400 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Existing Plans would allow road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half the roadless areas have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources), which could reduce the aquatic integrity of the roadless areas affected. Site-specific analysis would be completed prior to any geothermal exploration or development.

Summary of Effects. No adverse environmental effects on aquatic species or their habitats would be expected under Existing Plans because they do not directly authorize any ground-disturbing activities. Existing Plans permit road construction/reconstruction, timber cutting, and discretionary mineral activities to some degree. Based on projections for timber cutting, less than 0.5 percent of Idaho Roadless Areas likely would be affected under Existing Plans; with the potential for phosphate mining, less than 0.7 percent would be affected. Where these activities occur, especially if roads are constructed, or if the activities are concentrated, there could be adverse effects on aquatic species and their habitat, including potential effects on species richness, critical habitat, priority watersheds, fish strongholds, and MIS. However, other forest plan direction (i.e. INFISH & PACFISH) would apply to minimize effects on fish species and their habitat.

THE IDAHO ROADLESS RULE (PROPOSED ACTION)

Under the Idaho Roadless Rule, road construction/reconstruction, timber cutting (with limited exception), and discretionary mineral activities are prohibited on about 3.1 million acres of land within the Wild Land Recreation, Primitive, and SAHTS themes (33 percent of the Idaho Roadless Areas). Aquatic ecological values would be maintained under these themes because these themes protect aquatic resources including TES and MIS species, threatened and endangered critical habitat, native fish strongholds, and priority watersheds by limiting human-induced activities.

About 5.25 million acres are in Backcountry. Road construction/reconstruction would be permissible under several exceptions, including support of timber cutting for forest health and fuel reduction purposes. Most new roads would be temporary, unless the responsible official determines that a permanent road meets the road exceptions and it would not substantially alter any of the roadless characteristics. The Backcountry theme permits both surface occupancy and road construction/reconstruction to access unleased phosphate deposits.

About 0.6 million acres are in the GFRG theme. Road construction/reconstruction, timber cutting, and discretionary mineral activities are permissible in these areas. About 5,400 acres of Idaho Roadless Areas within the GFRG theme are located in strongholds for multiple species (table 3-40). There is no GFRG in roadless areas with high biodiversity (four threatened or endangered species) or that provide priority areas for multiple fish species. Portions of the Cuddy Mountain, French Creek, Mallard Larkins, Needles, Red Mountain, and Ten Mile/Black Warrior Roadless Areas are in the GFRG theme and overlap with one of the fish strongholds (appendix L, table L-7).

About 60 miles of road construction/reconstruction are projected to occur over the next 15 years. This estimate includes both permanent and temporary roads for timber cutting and non-timber related activities. Timber cutting is projected to occur on about 12,000 acres over the next 15 years (about 0.1 percent of all the Idaho Roadless Areas).

Activities would incorporate mitigation measures to reduce effects, especially if the activity may affect TES species. This level of road construction/reconstruction and timber cutting may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas.

Timber cutting, road construction/reconstruction, and discretionary mineral activities would be permissible within the GFRG theme. However, these activities would have to comply with ESA and management direction for threatened and endangered species included in existing plans (such as direction provided through the PACFISH and INFISH amendments or through subsequent forest plan revision).

All the national forests in Idaho – except for the Clearwater, Nez Perce, Challis, and Wallowa-Whitman – have roadless areas in the GFRG theme. The Caribou portion of the Caribou-Targhee National Forest has the most acreage of any of the forests in this

theme (251,800 acres). Most of the Caribou's roadless areas in the GFRG theme support Bonneville cutthroat trout, an R4 sensitive species.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to habitats for sensitive aquatic species (Bonneville cutthroat trout and amphibians) on these 12,100 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied. No threatened or endangered aquatic species are found in these roadless areas.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section) and there would be no effect on sensitive aquatic species found in this area.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would occur prior to exploration or development of geothermal energy resources and would include consideration of aquatic resources.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No aquatic resources would be affected in these areas.

Summary of effects. No adverse environmental effects on aquatic animal species or their habitats would be expected under the Idaho Roadless Rule because it would not directly authorize any ground-disturbing activities.

Limited ground-disturbing activities are likely to occur in Wild Land Recreation, Primitive, and SAHTS themes because of the restricted permissions on activities related

to road construction/reconstruction, timber cutting and discretionary minerals. These three themes should provide for natural processes, habitat integrity, and species diversity. Areas in the Backcountry theme have a higher potential for ground-disturbing activities (including road construction/reconstruction, timber cutting, and discretionary minerals activities) occurring depending on future land uses and the risk of wildland fire. Areas in the GFRG theme have the greatest potential for risk of adverse effects on aquatic species and habitat. The level of road construction/reconstruction and timber cutting projected may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas, but it is unlikely to reduce the overall biodiversity, critical habitat, strongholds, or priority watersheds found in Idaho Roadless Areas.

3.9 Terrestrial Animal Habitat and Species

INTRODUCTION

In general, Idaho Roadless Areas provide large, relatively undisturbed blocks of important habitat for terrestrial animal species and communities. Most Idaho Roadless Areas provide high quality habitat for cavity- and snag-dependent species as well as summer and winter range for big game species. Other important habitat values include:

- Dispersal corridors;
- Connectivity between large blocks of habitat;
- Travel corridors;
- “Islands” of refugia;
- Habitat diversity and complexity;
- Old-growth forests;
- “Natural” levels of snag and down woody debris components within forested habitats across large areas;
- “Source” habitats and “strongholds” for sensitive species;
- Security and seclusion during incubation, hatching, or birthing and rearing of young;
- Reduced big game and furbearer vulnerability during hunting and trapping seasons as a result of limited roaded access.

The following analysis evaluates the potential changes to roadless area characteristics and their ability to provide habitat for terrestrial animal species.

AFFECTED ENVIRONMENT

Idaho has a diverse assemblage of wildlife that occurs on an equally diverse landscape. There are approximately 1,200 native and non-native species of wildlife that occur within the five ecoregions of Idaho (IDFG 2005). Ecoregions denote geographic areas characterized by similar ecosystems and environmental resources. In Idaho the five ecoregions of Idaho are subdivided into 14 ecological sections (appendix M, table M-2).

Terrestrial Habitats within Idaho Roadless Areas

Idaho Roadless Areas include a range of habitat types such as grass and shrublands, young forested stands, and old-growth forests. Forests cover about 33 percent, or approximately 21.4 million acres of Idaho. These forests vary from the very dry pinyon-juniper woodlands at lower elevations to cold alpine forest types at high elevations. Idaho Roadless Areas are dominated by three primary vegetation types: 40 percent Douglas-fir, 20 percent spruce/fir, and 8 percent lodgepole pine (see the Forest Health

and Vegetation section). All other forest cover types make up are less than 5 percent each of the total Forest cover within Idaho Roadless Areas. The non-forest habitat types within the roadless areas are estimated to be 18 percent, including other vegetation types (such as grasslands, shrublands, and meadows), and barren areas (such as rock and ice). Appendix M, table M-3, displays the approximate forest type acreage in the State and within national forests of Idaho.

Threatened and Endangered Species

Idaho Roadless Areas provide habitat for two endangered mammals, one experimental, non-essential mammal and four threatened terrestrial wildlife species (table 3-41 and appendix M, tables M-1 and M-4).

Table 3-41. Threatened and endangered species in Idaho and their overlap with Idaho Roadless Areas

Species	Acres of predicted overlap with Idaho Roadless Areas	Known occurrence in Idaho Roadless Areas (national forest)
Gary wolf (E)	Not Available	Blacktail Mountain (Idaho Panhandle) Continental Mountain (Idaho Panhandle) Salmo-Priest (Idaho Panhandle)
Woodland caribou (E)	128,500	Salmo Priest (Idaho Panhandle)
Gray wolf (10j rule) (experimental)	5,669,600	Mallard (Nez Perce) Weir-Post Office (Clearwater) Sage Creek (Caribou)
Canada lynx (T)	3,740,800	39 Idaho Roadless Areas
Grizzly bear (T)	276,000	Blacktail Mountain (Idaho Panhandle) Continental Mountain (Idaho Panhandle) Little Grass Mountain (Idaho Panhandle) Salmo-Priest (Idaho Panhandle)
Northern Idaho ground squirrel (T)	220,900	none
Bald eagle (T)*	2,704,900	15 Idaho Roadless Areas

*Bald eagle is currently being delisted.

Forest Service Sensitive Species

Eight mammals, one reptile, and 17 birds listed as Forest Service sensitive species have predicted distribution in Idaho Roadless Areas. Of these 26 sensitive species, 22 are known to occur in Idaho Roadless Areas. Sensitive species and their habitat requirements are listed in appendix M, table M-5. Table M-5 also displays the acreage of predicted distribution in both the State and in Idaho Roadless Areas as well as the percentage of predicted distribution in roadless areas by sensitive species. Several sensitive species have less than 10 percent of predicted distribution in Idaho Roadless Areas, including:

- Trumpeter swan – less than 1 percent;
- Spotted bat – 1.9 percent;
- Common loon – 2.4 percent;

- Townsend's big-eared bat – 3.3 percent;
- Fringed myotis – 3.4 percent;
- Ring-necked snake – 6.4 percent;
- Pygmy rabbit – 6.9 percent;
- Greater sage grouse – 6.0 percent ;
- Columbian sharp-tailed grouse – 6.1 percent.

Species occurrence information may be lacking on sensitive species because wildlife survey work may not be complete in Idaho Roadless Areas. Sensitive species with no known occurrences in Idaho Roadless Areas at this time are the spotted bat and the black swift. Species with occurrences in three or fewer Idaho Roadless Areas are the fringed myotis, northern bog lemming, black-backed woodpecker, trumpeter swan, common loon, pygmy nuthatch, and ringneck snake.

Fringed myotis, common loon, trumpeter swan, and ringneck snake have a predicted distribution of less than 7 percent and three or fewer occurrences in Idaho Roadless Areas.

There are 125 Idaho Roadless Areas that have known occurrences of at least one threatened, endangered, or sensitive terrestrial wildlife species. Table 3-42 displays the 13 Idaho Roadless Areas by national forest with the occurrence of five or more threatened, endangered, and sensitive species.

Table 3-42. Idaho Roadless Areas with the most threatened, endangered, and sensitive (TES) terrestrial wildlife species

National forest	Idaho Roadless Area	Number of TES species
Idaho Panhandle	Salmo-Priest	7
Idaho Panhandle	Blacktail Mountain	6
Idaho Panhandle	Selkirk	6
Idaho Panhandle	Upper Priest	5
Targhee portion of Caribou-Targhee	Mt. Jefferson	7
Targhee portion of Caribou-Targhee	Garns Mountain	5
Payette	French Creek	7
Payette	Hells Canyon/7 Devils Scenic	6
Payette	Needles	5
Payette-Nez Perce	Rapid River	5
Nez Perce	Mallard	7
Salmon-Challis	West Big Hole	5
Sawtooth	Hanson Lakes	5

Management Indicator Species (MIS)

The 12 national forests in Idaho have designated 11 mammals and 20 birds as MIS. Appendix M, table M-6, displays the terrestrial wildlife species selected to serve as management indicators by each national forest in Idaho.

Four of the 31 MIS are threatened or endangered species and have been discussed in the previous section. Fifteen of the 31 MIS are sensitive species and have been discussed previously. There are 12 MIS whose habitat overlaps Idaho Roadless Areas and that have not been previously discussed. These include the pileated woodpecker, elk, white-tailed deer, moose, pine marten, belted kingfisher, downy woodpecker, hairy woodpecker, northern flicker, red-napped sapsucker, red squirrel, and Williamson's sapsucker (appendix M, table M-6).

Idaho Species of Concern

The Idaho Conservation Data Center recognizes 379 terrestrial wildlife species that regularly occur and breed in the State. This list includes 15 amphibians, 22 reptiles, 104 mammals, and 238 birds (Scott et al. 2002). The number of State "species of concern" ranked from S1 to S3⁴⁶ that are not included as threatened, endangered, experimental, nonessential, sensitive, or management indicator species previously discussed in this EIS are displayed in table 3-43.

Table 3-43. Number of Idaho species of concern not discussed elsewhere

Taxa	S1	S2	S3	Total
Birds	16	18	34	68
Mammals	10	7	12	29
Reptiles	1	2	1	5
Insects	8	2	0	10

Migratory Birds and Idaho Priority Bird Species and Habitats

The Idaho Partners in Flight Idaho Bird Conservation Plan (2000) identifies priority species and habitats and establishes objectives for bird populations and habitats in the State of Idaho. The northern two-thirds of Idaho are located within the Central Rocky Mountains Physiographic Area 64 (Partners in Flight 2007). The rest of Idaho is within the Columbia Plateau Physiographic Area 89 (Partners in Flight 2007). Breeding bird surveys are conducted annually during the peak of the nesting season across North America. Breeding bird survey routes are randomly located in order to sample habitats that are representative of the entire region (Sauer et al. 2004). There are 56 permanent

⁴⁶ *Species of concern* – species identified by the State of Idaho in need of conservation.

S1=State Critically imperiled: at high risk because of extreme rarity, rapidly declining numbers, or other factors that make it particularly vulnerable to extirpation in the state.

S2=State Imperiled: at risk because of restricted range, few populations, rapidly declining numbers or other factors that make it vulnerable to range-wide extinction or extirpation.

S3=State Vulnerable: at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to range-wide extinction or extirpation

active breeding bird survey routes in Idaho. Most of these routes have had breeding bird surveys conducted annually since the 1960s. Seven national forests have breeding bird survey routes, 12 of which occur within all or portions of Idaho Roadless Areas. See appendix M, table M-7, for specific migratory bird information.

Biodiversity and Species Richness

In the ecological literature, diversity refers to both the number of species present and their relative abundance. Thus, an area with many abundant species is more “diverse” than an area with an equal number of species, few of which are abundant and most of which are rare. Marcot et al. (1997) examined centers of endemism (restricted to a small areas) and high biodiversity within the Interior Columbia Basin, much of which covers the state of Idaho. Two centers overlapped with Forest Service lands in Idaho – one located on the upper Panhandle of Idaho, characterized by mixed conifer forests; and another located in the southwestern edge of the State along the Salmon River and Hell’s Canyon. Based on the predicted distributions for the 42 TES and/or MIS species, all the roadless areas in Idaho overlap with at least 13 of the species (table 3-44). In general, the findings corroborated that reported by Marcot et al. (1997).

Table 3-44. The number of species’ predicted distributions that overlap Idaho Roadless Areas

Number of species	Number of Idaho Roadless Areas
13–17	24
18–22	37
23–25	49
26–28	112
29–32	51

In general, high species richness was noted in roadless areas in the Idaho Panhandle and along the southwestern Idaho Forests (fig. 3-15 and table 3-45), a finding similar to that reported by Marcot et al. (1997).

Table 3-45. Species richness in Idaho Roadless Areas by national forest

National forest	13–17	18–22	23–25	26–28	29–32
Boise	0	0	8	20	14
Caribou portion of Caribou-Targhee	11	23	0	0	0
Clearwater	0	1	10	5	0
IPNF	0	1	5	27	14
Nez Perce	0	0	0	11	7
Payette	0	0	2	10	10
Salmon-Challis	4	5	15	33	1
Sawtooth	10	0	3	6	4
Targhee portion of Caribou-Targhee	0	8	7	1	0
Wallowa-Whitman	0	0	0	0	2

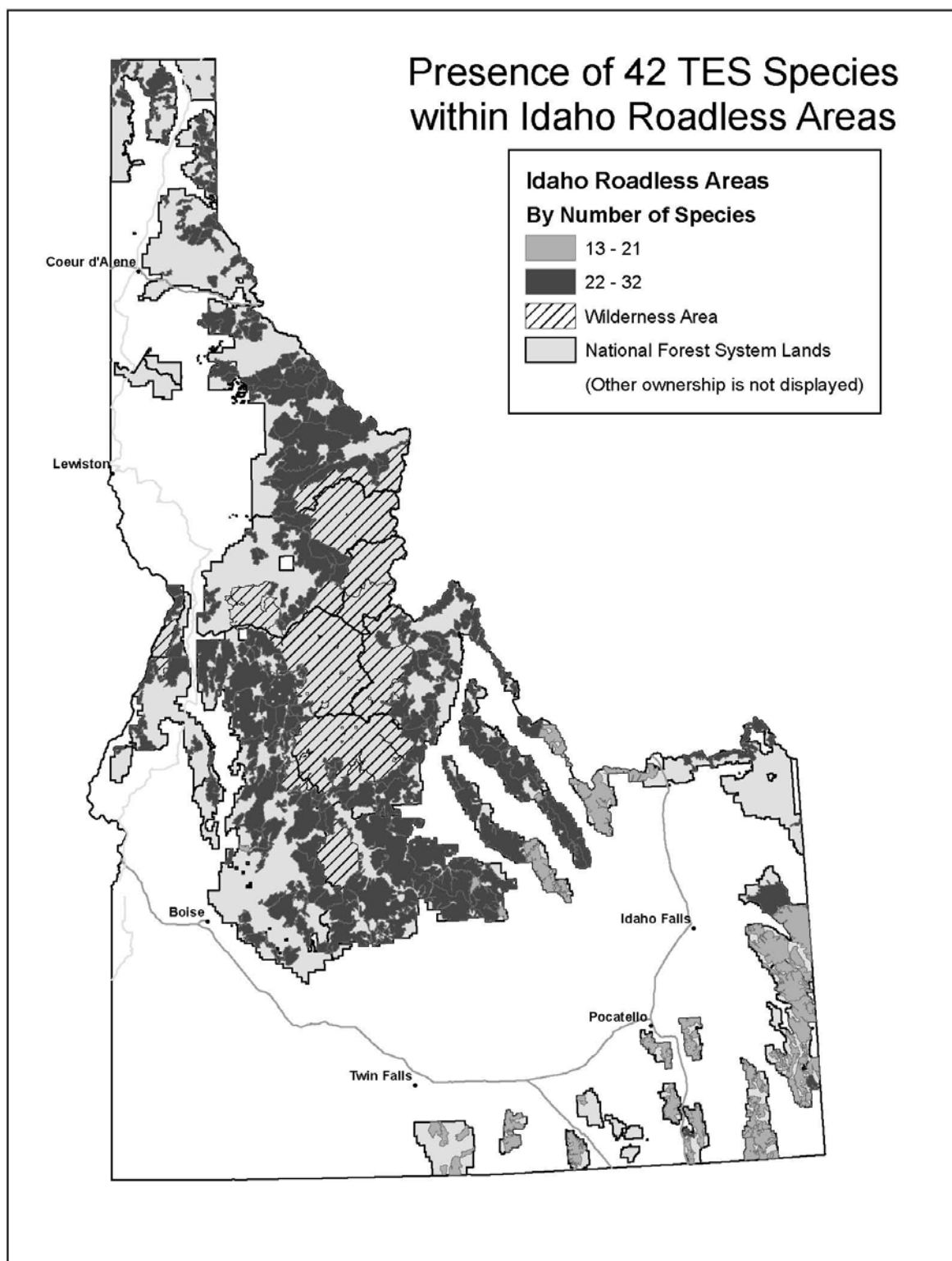


Figure 3-15. Terrestrial species richness in Idaho Roadless Areas.

ENVIRONMENTAL CONSEQUENCES

Almost all roads present some level of benefit and risk. These effects can vary greatly in degree (USDA Forest Service 2000r) and can shift over time. Some effects are immediately apparent, but others may require external events, such as a large storm, to become visible. Still other effects may be subtle, such as increased susceptibility to invasion by nonnative species or pathogens noticed only when they become widespread in the landscape or with increased road use as recreation styles and motor vehicles change (USDA Forest Service 2000r). A road-related beneficial effect for one species, may, in fact, represent an adverse effect for another. For example, although forest edges, such as those created by road construction and timber cutting, may benefit some species, such as deer and bobwhite quail, they also provide roaded access to interior forest patches for opportunistic or predator species (Norse et al., 1986).

Wildlife responses to habitat change and disturbance vary with species, individuals, activity, and context; nevertheless, road-related impacts have been documented in a number of taxonomic groups, including ungulates (Cole et al. 2004, Joly et al. 2006, Marshal et al. 2006, Preisler et al. 2006), carnivores (Fredrick 1991, Ream and Mattson 1982, Gaines et al. 2005, Waller and Servheen 2005), reptiles (Shine et al. 2004, Andrews and Gibbons 2005), amphibians (Marsh et al. 2005), and birds (Anthony and Isaacs 1989, Stolen 2003).

Wildlife Responses

Timber cutting/Vegetation Management

Timber cutting activities permitted in roadless areas under the three alternatives vary in degree from slashing in preparation for prescribed burns to commercial harvest that could remove large-diameter trees.

The effects of activities associated with timber cutting (such as tree felling, yarding, landings, site preparation by burning or scarification, fuels reduction, brush removal and whip felling, and forest regeneration) are often difficult to separate from the effects of roads and road construction. The road systems developed to cut/harvest timber are often a significant factor affecting terrestrial habitats, as discussed above. Further, the nature of effects resulting from timber cutting (habitat loss, fragmentation, and human disturbance) is similar to those created by roads, albeit different with respect to scale, configuration, and total area directly affected.

Habitat Availability and Effectiveness. Timber cutting can alter habitat availability, configuration, and effectiveness for terrestrial wildlife species. The effects of uneven-aged management regimes, such as thinning, can have variable effects on animal communities, depending on the species. Hayes et al. (2003) found that thinning densely stocked conifer stands decreased detections of Hutton's Vireos (*Vireo huttoni*), golden-crowned kinglets (*Regulus satrapa*), brown creepers (*Certhia americana*), blackthroated gray warblers (*Dendroica nigrescens*), and varied thrushes (*Ixoreus naevius*) but increased

densities of American robins (*Turdus migratorius*), Townsend's solitaires (*Myadestes townsendi*), Hammond's flycatchers (*Empidonax hammondi*), western tanagers (*Piranga ludoviciana*), evening grosbeaks (*Coccothraustes vespertinus*), and hairy woodpeckers (*Picoides villosus*). Patriquin and Barclay (2003) also documented differential responses of bats depending on species. For example, bat species that glean prey from surfaces did not forage in clear-cut areas whereas aerial foragers frequented areas along the forest edges.

Several studies have found that post-fire salvage logging reduces diversity and densities of cavity-nesting birds, such as the American three-toed (*Picoides dorsalis*) and black-backed (*P. arcticus*) woodpeckers (Hutto and Gallo 2006, Wesolowski et al. 2005). Decreases in primary cavity nesters may be due to a reduction in food availability (wood-boring beetle larvae) compared to nest sites where sufficient snags are retained to support maximum densities of birds (Hutto and Gallo 2006).

Fragmentation. Research over the past 2 decades has shown that habitat edge is not benign to many species (Noss and Cooperrider 1994). In terrestrial ecosystems, the edge effect of timber harvest can extend substantial distances from the harvest area. Some timber harvest introduces new edge habitat, which influences air and soil temperature, wind velocity, radiation, and soil and air moisture in the adjacent forest stands (Chen et al. 1995). Further, creation of edge due to harvest can result in the introduction of edge-dwelling species, such as parasitic cowbirds or non-native invasive plants, which can have detrimental effects on native, interior forest-dwelling species (Baker and Lacki 1997, Robinson et al. 1995, Rosenberg et al. 1999). The establishment of these non-natives can lead to habitat loss, inter-specific competition, loss of quality forage, and lowered reproductive success for some plant and wildlife species (Trombulak and Frissell 2000).

As with roads, fragmentation from timber harvest can create travel barriers to some species, which may make substantial amounts of suitable habitat inaccessible. These travel barriers can fragment and isolate populations into smaller subpopulations causing demography fluctuations, inbreeding, loss of genetic variability, and local population extinctions. Amphibian species, because of their temporally and spatially dynamic populations, may be especially prone to local extinction resulting from human-caused fragmentation (Gibbs 1998). Many amphibian species are found in lower densities in some timber harvest areas when compared to mature, unmanaged forests (deMaynadier and Hunter Jr. 1998, Petranka et al. 1993, Ash 1997, deMaynadier and Hunter Jr. 1999). Factors identified as potential threats to the lynx included some types of timber harvest or thinning that removed essential prey habitat (USDI 1998a).

Beneficial Effects of Timber Cutting. Beneficial effects on terrestrial species from timber cutting activities are often due to creating or maintaining some specific habitat condition. Timber cutting creates forest age-class diversity and mosaic habitats used by some species (Wisdom et al. 2000, USDA Forest Service 2000n, Southern Appalachian Man and the Biosphere 1996, USDA Forest Service 1995a, USDI Fish and Wildlife

Service 1990, USDI Fish and Wildlife Service 1976). In fire-adapted ecosystems where fire suppression has altered composition and spatial distribution and configuration of openings, timber cutting can be a tool that can be used to improve the condition of these ecosystems.

Some species require early seral or open-forest habitats that can be created and maintained by properly planned, restorative timber cutting. Timber cutting activities may also reduce the risk of uncharacteristic large stand-replacing insect and disease outbreaks and severe wildland fires. These disturbance events can present both benefits and risks to some species (Wisdom et al. 2000), at least at a local level. Some examples of potential timber cutting beneficial effects include the following:

- The snowshoe hare, a primary lynx prey species, can benefit from properly planned regeneration harvests (Ruediger et al. 2000).
- Juvenile goshawks could benefit from forest management regimes that are designed to support abundant prey items while maintaining forest structural conditions to allow juveniles to access prey within breeding areas (Wiens et al. 2006).
- Some species of bats appear to respond favorably to thinning in forested ecosystems (Loeb et al. 2002).
- Reynolds and others (1991) suggest that active management activities such as tree thinning may be beneficial in producing and maintaining the desired conditions for sustaining goshawks and their prey species.
- Mitchell and Powell (2003) noted that forest harvest can increase food resources for black bears, because of an increase in soft mast that is typically more limited in stands with significant overstory canopy. In terms of larger implications to black bear populations, there are tradeoffs between the resources mature stands offer and the food resources harvested stands offer. Where food resources are not limiting, forest management will have limited impacts on populations.

Mining

Roadless areas within Idaho contain saleable, leasable, and locatable mineral resources. Generally, many of the impacts discretionary mining could have on terrestrial wildlife species would result from the required infrastructure, primarily road construction and development. The impacts related to these activities include habitat loss, fragmentation, and human disturbance, all of which are discussed in detail above.

Specific Effects of Management Activities on Terrestrial Wildlife Species in Idaho

In general, road construction/reconstruction, timber cutting and discretionary mineral activities would have limited effect on terrestrial species associated with open water systems, rocky cliffs, or mine shafts (appendix M, tables M-9, M-10, M-11). These include primarily avian species: waterfowl, select raptors, and the black swift. Species most likely to be vulnerable to activities are typically associated with forested or

grassland ecosystems that may be affected by roads, timber cutting, or discretionary mining. Cavity nesters, such as several of the woodpecker species and the flammulated owl, ranked out as moderate-high risk because of the potential for timber cutting to remove important habitat components. The grizzly bear, due to the potential severity of impact (increased direct mortality) related to increased human-bear conflicts facilitated by roads also ranked out as a high risk. However, all activities occurring in grizzly bear habitat would likely be designed to meet recovery objectives.

All Alternatives

None of the alternatives would prohibit road construction or reconstruction associated with developing existing mineral leases on the Caribou-Targhee National Forest. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres, associated with the Smoky Canyon mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon mine expansion would affect the Sage Creek and Meade Peak roadless areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas, would likely be permitted and developed sometime in the extended future (50 or more years). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas.

Any future phosphate development could affect terrestrial habitat in a number of ways: through physical removal of habitat and increased disturbance to adjacent habitat, increased potential for road-related mortality, and the potential to ingest forage contaminated with selenium. Any future development would undergo environmental analysis, and environmental mitigations would be required to lessen effects.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule generally prohibits road construction/reconstruction. There are seven exceptions where this activity can occur. The 2001 Roadless Rule also generally prohibits timber cutting, except to restore threatened and endangered species habitat, or for other stewardship purposes. No road construction is permitted to support timber cutting activities.

Under the 2001 Roadless Rule, about 15 miles of road construction or reconstruction is projected to occur over a 15-year period. Construction of 1 mile of road per year equates to a physical footprint approximately 0.5 acres in size or about 7.5 acres over 15 years. As discussed earlier, the indirect effects of roads extend beyond the road prism and have the potential to affect a much greater area. However, given the limited extent of

road construction projected (15 miles over a 15-year period), the likelihood of negative impacts on any terrestrial wildlife species and their habitats resulting from road construction and reconstruction is exceptionally low.

Prohibitions on road construction/reconstruction in roadless areas would benefit most species, particularly species that have large home ranges, are sensitive to human disturbance, and/or that experience increased mortality due to increased human access facilitated by roads. Although all species listed under ESA within Idaho stand to benefit from prohibitions on road construction, the grizzly bear and woodland caribou would likely benefit most because of reduced disturbance and wildlife-human interactions that are facilitated by roads.

Based on information provided by each national forest in 2000, the current need for road construction or reconstruction within roadless areas for recovery or protection of threatened, endangered, or sensitive species appears to be minimal. There was no reason to expect that this would change in the upcoming decades. It is unlikely that alternate means of access could not be found to accomplish recovery or conservation objectives, although costs may increase in some situations. Because all the prohibition alternatives provide an exception that an existing road may be realigned to prevent irreparable resource damage, adverse effects on TES and other species caused by existing roads may be mitigated.

Roads can facilitate treatments that are designed specifically to improve habitats for other terrestrial wildlife, particularly game species such as mule deer, elk, wild turkey, upland birds, and black bear. However such treatments in roadless areas, in the absence of revenues generated from associated timber harvest, are difficult to implement financially and thus infrequently proposed within roadless areas.

The 2001 Roadless Rule prohibits timber cutting, sale, or removal except as provided in four exceptions. A very low amount of timber cutting in Idaho Roadless Areas, about 1,500 acres over 15 years, is projected under the 2001 Roadless Rule. Because of the exceptions and the intent to maintain roadless characteristics, the type of timber cutting in Idaho Roadless Areas would be restricted to removal of small-diameter materials and to cutting that maintains some structure and canopy. Such treatments, compared to even-aged management regimes, are less likely to fragment habitats.

With the added prohibition against non-stewardship timber cutting and the limitations on the type and extent of change to existing vegetation, the 2001 Roadless Rule presents a very low risk to terrestrial wildlife resources from habitat loss and fragmentation resulting from timber cutting. Further, other impacts on wildlife species from timber cutting activities, such as disturbance, would be minimal.

The 2001 Roadless Rule also prohibits road construction and reconstruction associated with new leases. About 13,400 of known phosphate deposits are currently not leased and would not be developed, and road access would not be provided for geothermal development. These areas would retain their roadless characteristics and continue to provide undisturbed terrestrial species habitat.

Summary of Effects. No adverse environmental effects on TES terrestrial species or their habitats would be expected from the 2001 Roadless Rule, because it does not directly authorize any ground-disturbing activities. Ground-disturbing activities permitted under this alternative include limited road construction/ reconstruction and limited timber cutting across the entire 9.3 million acres of Idaho Roadless Areas. Overall, the effects on biodiversity would be beneficial.

Generally, most terrestrial wildlife species would benefit from prohibitions on road construction/reconstruction, and timber cutting in Idaho Roadless Areas because the adverse effects of these activities would be reduced. Limiting the ability to harvest timber for stewardship purposes except when needed for protection or recovery of TES species or to restore/ maintain ecosystem characteristics, may reduce the capability to enhance habitat directly and indirectly at the stand level, but it is unlikely to have much impact at larger scales. The ability to use timber harvest to manage for early successional or other structural stages in some areas would be limited; although where such a need is identified, prescribed fire can be an effective tool under certain conditions.

Existing Plans

Under Existing Plans road construction/reconstruction, timber cutting, and discretionary mineral activities are generally prohibited on about 3.45 million acres of land within Idaho Roadless Areas (36 percent of the Idaho Roadless Areas). These areas would continue to provide excellent habitat for terrestrial species because of the limited amount of human induced disturbance.

About 4.24 million acres are in management prescriptions similar to Backcountry; generally some level of road construction/reconstruction and timber cutting would be permitted. Discretionary mineral activities may or may not be permitted depending on the forest plan (appendix B). Timber cutting and limited road construction could occur under this theme, although these activities would likely be limited to those necessary to improve ecosystem health or to address imminent threat of catastrophic wildfire. Thus, there is the potential for terrestrial wildlife species to be affected, particularly in forested habitats, as a result of fuels reduction activities. Removal of diseased, dead, and down materials could have negative impacts on primary cavity nesters, although existing snag retention requirements already included in most forest plans would help mitigate some of these effects.

About 1.26 million acres are in prescriptions similar to GFRG. Road construction/reconstruction, timber cutting, and discretionary mineral activities are generally permissible in these areas. Most road construction and timber cutting is anticipated to take place in areas managed as GFRG. Approximately 1,262,400 acres (15 percent) of Idaho Roadless Areas fall into this category. All forests except the Challis National Forest and the Wallowa-Whitman National Forest have roadless areas that include management under this theme. However, most acres in GFRG fall on the Caribou-Targhee, Idaho-Panhandle, Nez Perce, Salmon, and Sawtooth National Forests.

The terrestrial wildlife species found on these forests that are vulnerable to effects of roads, timber cutting, and discretionary mining, as discussed in the General Effects section, could be differentially affected under this theme.

Projected road construction and reconstruction in roadless areas under Existing Plans is 180 miles over a 15 year period, equivalent to about 90 acres, about half of which would likely be in the form of temporary roads, or would be reconstruction. This estimate includes both permanent and temporary roads for timber cutting and non-timber related activities. The projected timber cutting is estimated to occur on 42,000 acres over 15 years.

Among federally listed species, the Canada lynx, gray wolf, grizzly bear in Northern Idaho, and woodland caribou could be at moderate to high risk of impact from these activities (appendix M, table M-9). The likelihood that individuals of these species would encounter these activities or their effects is relatively low given that less than 5.2 percent of their predicted distributions overlap at all with areas that would be managed as GFRG (appendix M, table M-12) under Existing Plans. In addition, the Northern Rockies Lynx Amendment provides standards and guidelines to minimize adverse effects on lynx in occupied habitat that could result from roads, vegetation management, and mining (USDA Forest Service 2007).

Of sensitive species that could be at moderate to high risk of impact—including black-back woodpecker, boreal owl, Columbia sharp-tailed grouse, fisher, flammulated owl, great gray owl, greater sage grouse, grizzly bear (Yellowstone population), pine marten, northern bog lemming, northern goshawk, pygmy nuthatch, three-toed woodpecker, Townsend's big-eared bat, white-headed woodpecker, and wolverine—none have predicted distributions that overlap GFRG areas by more than 5 percent (appendix M, table M-12). Although some individuals could encounter activities and their impacts, the likelihood is relatively low.

Of management indicator species that could be at moderate to high risk of impact—downy woodpecker, elk, hairy woodpecker, and moose—none have predicted distributions that overlap GFRG areas by more than 4.6 percent (appendix M, table M-12) and thus opportunities for impact are limited.

Because roadless areas on the Idaho Panhandle National Forest overlap a large number of species distributions, management activities that could take place in areas managed as GFRG have the potential to affect more species, and thus more area of high species richness, than on other forests. The Salmon National Forest contains the most roadless area acres under GFRG (404,300 acres) under Existing Plans but also ranked out as relatively low on species richness.

Table 3-46 shows the Idaho Roadless Areas with the most TES terrestrial wildlife species and the amount of acres by themes. About 764,700 acres in roadless areas overlap with areas the most TES species. About 50 percent of these roadless areas are in equivalent themes that pose little risk to terrestrial species. About 3 percent are in GFRG, and 47 percent in prescription equivalent to Backcountry.

Table 3-46. Existing Plans, acres by equivalent theme for Idaho Roadless Areas with the most TES terrestrial wildlife species

Forest	Roadless Area	Wild Land Recreation	Primitive	Backcountry	GFRG	Forest plan special areas
Idaho Panhandle	Salmo-Priest	13,500	0	800	0	5,700
Idaho Panhandle	Blacktail Mountain #122	0	0	1,300	2,900	800
Idaho Panhandle	Selkirk	25,400	30,100	36,400	0	6,100
Idaho Panhandle	Upper Priest	0	0	4,300	200	6,400
Nez Perce	Mallard	0	0	12,700	6,900	0
Payette	French Creek	0	11,500	65,100	100	12,100
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Needles	90,200	7,100	31,500	0	2,500
Payette-Nez Perce	Rapid River	0	6,000	45,700	0	6,000
		0	14,000	2,400	300	4,300
Salmon	West Big Hole	0	26,000	43,900	11,600	2,900
Sawtooth	Hanson Lakes	15,000	2,500	13,800	0	8,600
Targhee*	Mt. Jefferson	0	41,000	13,200	0	6,800
Targhee*	Garns Mountain	0	0	90,800	0	4,800
		144,100	167,400	361,900	23,800	67,500

* Targhee portion of the Caribou-Targhee National Forest.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest within the Bald Mountain, Bear Creek, and Poker Creek Roadless Areas. An environmental analysis would have to be completed to determine how many of the 6,900 acres could actually be leased. In addition, environmental analysis would be completed prior to exploration and development of phosphate resources.

Existing Plans may allow road construction/reconstruction for geothermal development in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half the roadless areas have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission

lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Terrestrial species and their habitat would be considered during site-specific analysis and mitigations applied.

Summary of Effects. No adverse environmental effects on terrestrial species or their habitats would be expected from the Existing Plans, because they do not directly authorize any ground-disturbing activities. With the projected trend that road construction/reconstruction, timber cutting, and discretionary mineral activities would be highest under Existing Plans, and given the numerous negative direct and indirect effects on terrestrial wildlife species and their habitats identified in the literature associated with these activities, the Existing Plans have potential for risk of adverse effects on terrestrial animal species and terrestrial habitats. Many of the Existing Plans have additional management direction that addresses TES habitat needs.

Idaho Roadless rule (Proposed Action)

Under the Idaho Roadless Rule, road construction/reconstruction, timber cutting, and discretionary mineral activities are generally prohibited on about 3.1 million acres of land within Idaho Roadless Areas (33 percent of the roadless areas). These themes protect terrestrial resources including TES and MIS species and their habitat by limiting human-induced activities.

About 5.25 million acres are in Backcountry. Road construction/reconstruction would be permissible under seven exceptions, including support of timber cutting for stewardship and fuel reduction purposes. Most new roads would be temporary, unless the responsible official determines that a permanent road meets the road exceptions and it would not substantially alter any of the roadless characteristics. About 60 miles of road are projected to be constructed/reconstructed over a 15 year period.

Timber cutting would be permitted for forest health or fuel reduction purposes. Removal of diseased, dead, and down materials could have negative impacts on primary cavity nesters, although existing snag retention requirements already included in most forest plans would help mitigate some of these effects. About 12,000 acres of timber cutting are projected to occur over 15 years for stewardship and fuel reduction purposes.

About 0.6 million acres are in the GFRG theme. Road construction/reconstruction, timber cutting, and discretionary mineral activities are permitted in these areas. All of the forests, except for the Challis, Clearwater, Nez Perce, and the Wallowa-Whitman National Forests, have acres under the GFRG theme. The Caribou portion of the Caribou-Targhee National Forest (251,800), the Targhee portion of the Caribou-Targhee National Forest (146,900), and the Sawtooth National Forest (146,900) have the most acres of any of the forests in the GFRG theme. Many of the lands on these in the GFRG theme are managed as rangelands.

Among federally listed species, the Canada lynx, gray wolf, grizzly bear in Northern Idaho, and woodland caribou could be at moderate to high risk of impact from these

activities (appendix M, tables M-9, M-10, and M-11). The likelihood that individuals of these species would encounter these activities or their effects is relatively low given less than 2.5 percent of their predicted distributions overlap at all with areas that would be managed as GFRG (appendix M, table M-12) under the Idaho Roadless Rule. In addition, the Northern Rockies Lynx Amendment provides standards and guidelines to minimize adverse effects on lynx in occupied habitat that could result from roads, vegetation management, and mining.

Of sensitive species that could be at moderate to high risk of impact – black-back woodpecker, boreal owl, Columbia sharp-tailed grouse, fisher, flammulated owl, great gray owl, greater sage grouse, grizzly bear (Yellowstone population), pine marten, northern bog lemming, northern goshawk, pygmy nuthatch, three-toed woodpecker, Townsend’s big-eared bat, white-headed woodpecker, and wolverine – none have predicted distributions that overlap GFRG areas by more than 2.2 percent (appendix M, table M-12). Although some individuals could encounter activities and their impacts, the likelihood is relatively low.

Of management indicator species that could be at moderate to high risk of impact – downy woodpecker, elk, hairy woodpecker, and moose – none have predicted distributions that overlap GFRG areas by more than 1.7 percent (appendix M, table M-12) and thus opportunities for impact are limited. Table 3-47 shows the Idaho Roadless Areas with the most threatened, endangered, and sensitive terrestrial wildlife species and the amount of acres in each Idaho Roadless Rule theme.

Table 3-47. Idaho Roadless Rule acres by theme for Idaho Roadless Areas with the most TES terrestrial wildlife species

Forest	Roadless Area	Wild Land Recreation	Primitive	Backcountry	GFRG	Forest plan special areas
Idaho Panhandle	Salmo-Priest	14,300	0	0	0	5,700
Idaho Panhandle	Blacktail Mountain #122	0	0	4,200	0	800
Idaho Panhandle	Selkirk	31,300	10,700	41,200	8,700	6,100
Idaho Panhandle	Upper Priest	0	0	6,100	200	6,400
Nez Perce	Mallard	0	0	19,600	0	0
Payette	French Creek	0	11,500	65,100	100	12,100
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Needles	90,200	7,100	31,500	0	2,500
Payette-Nez Perce	Rapid River	0	51,700 16,700	0	0	6,000 4,300
Salmon	West Big Hole	0	20,500	61,000	0	2,900
Sawtooth	Hanson Lakes	15,000	2,500	13,800	0	8,600
Targhee*	Mt. Jefferson	0	41,000	13,200	0	6,800
Targhee*	Garns Mountain	0	0	90,800	0	4,800
		150,800	190,900	346,500	9,000	67,500
* Targhee portion of the Caribou-Targhee National Forest.						

The Idaho Roadless Rule would allow road construction/reconstruction and surface occupancy for phosphate exploration and development within the Backcountry and GFRG themes. There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the Caribou-Targhee National Forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to terrestrial species habitat on these 12,100 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section); and there would be no effect on terrestrial species found in this area.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would occur prior to exploration or development of geothermal energy resources and would include consideration of terrestrial resources.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No terrestrial resources would be affected in these areas.

Summary of Effects. No adverse environmental effects on terrestrial species or their habitats would be expected from the Idaho Roadless Rule, because it does not directly authorize any ground-disturbing activities. Roadless areas in the Wild Land Recreation, Primitive, and SAHTS themes should be protected from ground-disturbing activities under the Idaho Roadless Rule because of the restricted permissions on activities related to road construction/ reconstruction, timber cutting, and discretionary minerals. These three themes should provide for natural processes, habitat integrity, and species diversity. Areas in the Backcountry theme have a higher risk of ground-disturbing

activities (including road construction/ reconstruction, timber cutting, and discretionary minerals activities) occurring depending on future land uses and the risk of wildland fire. Areas in the GFRG theme have the greatest potential for increased risk of adverse effects on terrestrial animal species and habitat, although most species have less than 3 percent of their predicted distributions that overlap with this theme.

CUMULATIVE EFFECTS—TERRESTRIAL AND AQUATIC SPECIES

All Alternatives

Non-Federal habitat. There are about 52,961,000 acres of land in Idaho, of which about 20,464,000 acres are NFS lands. The Federal Government manages approximately 63 percent of all Idaho lands; the remaining 37 percent is in non-Federal ownership. Because non-Federal lands are a smaller percentage of all lands in Idaho, they are often influenced by management on Federal lands.

The role of non-Federal lands in maintaining and recovering species and their habitats is not well-defined. Idaho's current population of 1.3 million people is expected to be 2 million by 2030 and much greater by 2100 (IDFG 2005). The increased demands these individuals will place on the land will increase the value of roadless areas on Federal land to terrestrial and aquatic species. In light of projected future population trends, the Idaho Roadless Areas can provide some of the best terrestrial and aquatic species habitat in Idaho into the future.

The Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005) provides a foundation for sustaining Idaho's fish and wildlife and the habitats upon which they depend. The strategy provides general directions for wildlife conservation and a stimulus to engage partners in conservation of Idaho's wildlife resources. In addition, there are several species-specific recovery plans and conservation strategies for species occurring in Idaho, such as the Idaho Bull Trout Plan (Batt 1996). Several of the tribal governments within Idaho have developed wildlife and fisheries conservation and restoration plans. Because of these efforts, terrestrial and aquatic habitats on non-Federal land would in general remain stable or slightly improve over the long-term. Some lands may experience impacts on natural resources from urbanization and development, resource demands (for example, minerals), and recreation. Some conditions resulting in lower habitat quality on non-Federal land may limit the potential effectiveness of habitat conservation and restoration on Federal lands.

Non-native invasive species. Non-native invasive species are a problem throughout Idaho. Current State and Federal activities and authorities address some invasive species and their prevention and control, including the Idaho Invasive Plan (IDA 2005) and the National Strategy and Implementation Plan for Invasive Species Management (USDA Forest Service 2004a). Of particular concern is that the presence or spread of invasive species could potentially limit the effectiveness of habitat improvements or efforts to recover species. Roads often provide vectors for spread of invasive species. In

general, areas with fewer roads have a lower risk of having invasive species populations established.

Impacts of existing management practices. Existing management practices within and outside Idaho Roadless Areas have the potential to affect terrestrial and aquatic animal species and habitats. Land management activities such as timber harvest, road construction and maintenance, dams and diversions, livestock grazing, mining, and recreation can result in changes to vegetation composition and structure, successional processes, nutrient cycling, water quality and quantity, and habitat complexity. Other human activities related to urbanization can have dramatic effects on terrestrial and aquatic species and habitats.

Effects on terrestrial and aquatic habitats from human activities tend to be chronic disturbances rather than episodic. Native species did not evolve with chronic disturbances such as continual sediment inputs to aquatic habitats from poorly maintained roads. Species did, however, evolve and adapt to sediment inputs from events such as landslides. Human-caused impacts can be masked by natural disturbance processes such as flooding, fires, and soil mass movements. However, native species evolved with natural disturbance processes and they can often recover from these types of events, even when they appear to be catastrophic.

The Idaho Roadless Areas provide areas where natural process can largely occur without human management influences. Information gained from these areas can help us to better understand cumulative effects occurring elsewhere on the landscape and their impacts on terrestrial and aquatic species and habitats.

Fire. For many aquatic ecosystems, fire has played an important role in creating and maintaining suitable habitat at varying temporal and spatial scales. Many species evolved under the influence of recurrent fire, including stand-replacing events, and their long-term persistence relies heavily on the maintenance of important habitat components by these kinds of disturbance events.

At a landscape level, fires create and maintain habitat mosaics of different vegetation types (Mushinsky and Gibson 1991). These mosaics include a diversity of patch size, composition, and structure, as well as connectivity among patches. Smith (2000) identified the following landscape-level fire effects on terrestrial species: (1) changed availability of habitat patches and heterogeneity within them; (2) changed compositions and structures of larger areas, such as watersheds, which provide the spatial context for habitat patches; and (3) changed connections among patches. During the course of post-fire succession, all three of these landscape features are in flux.

Factors affecting anadromous fish. There are four anadromous fish species in Idaho: Snake River sockeye salmon (endangered), Snake River fall Chinook (threatened), Snake River spring/summer Chinook (threatened), and Snake River steelhead (threatened). Currently Idaho Roadless Areas provide some of the best habitat and strongest populations of these fish.

Human activities on Federal and non-Federal lands—including hydropower, hatcheries, harvest, and land management such as road building, grazing and recreation—have altered anadromous fish environments leading to widespread declines (USDA Forest Service 2000r, pg. 139). Idaho Roadless Areas are key to recovery of salmon and steelhead stocks in decline, providing habitat to protect species until longer term solutions can be developed for migration, passage, hatchery, and harvest problems associated with the decline of anadromous fish (USDA Forest Service 2001). Maintaining current populations and future recovery of anadromous species in Idaho depends on reducing mortality from a variety of factors.

NOAA Fisheries, in partnership with Idaho's Office of Species Conservation, is beginning to draft Idaho's portion of the Snake River Salmon and Steelhead Recovery Plan, which is scheduled to be completed in 2007.

Climate change/global warming. Climate change and global warming are affecting terrestrial and aquatic animal species and habitats in Idaho. Average annual temperature increases due to increased carbon dioxide are affecting snowpack, peak runoff, and base flows of stream and rivers. Spring snowpack will probably be less, and more precipitation will probably fall as rain than as snow. Spring peak runoff will be earlier.

Changes due to climate change and global warming could be compounded considerably in combination with other disturbances such as fire. Larger climate-driven fires can be expected in Idaho in the future.

Climate change is also affecting phenology (the biology of timing of organisms), involving aspects such as animal hibernation and migration. In addition, for species such as bull trout that require colder water temperatures to survive and reproduce, warmer temperatures could lead to significant decreases in available suitable habitat.

Biodiversity. Based on current literature (Flather et al. 1999, Noss and Cooperrider 1994, Stein et al. 2000) it is possible to conclude that with or without conservation of roadless areas, biodiversity is at an increased risk of adverse cumulative effects from increased population growth and associated land uses, land conversions, and nonnative species invasions. Maintenance of roadless characteristics, however, may lessen this risk at least in the short term (20 years). By reducing the level of potential adverse impacts on roadless areas, some of the last relatively undisturbed large blocks of land outside of designated wilderness that contribute to species biodiversity would be conserved.

Conservation of roadless characteristics could have beneficial effects on biodiversity conservation at the local, regional, National Forest System, and national levels. There would be similar incremental beneficial effects on biodiversity conservation when any of the prohibitions is combined with past, present, and reasonably foreseeable land uses and conversions, laws, regulations, policies, and non-native species invasions. The local, regional, and national cumulative beneficial effects to TES species and biodiversity could include:

- Conserving and protecting large contiguous blocks of habitat that provide habitat connectivity and biological strongholds for a variety of terrestrial and aquatic plant and animal species including TES species;
- Providing important local and regional components of conservation strategies for protection and recovery of listed TES species;
- Providing increased assurances that biological diversity would be conserved at a landscape level, including increased area of ecoregions protected, improved elevational distribution of protected areas, decreased risk of additional timber harvest and road caused fragmentation, and maintenance and restoration of some natural disturbance processes;
- Providing increased assurance that biodiversity would be supported within Idaho Roadless Areas, including the maintenance of native plant and animal communities where nonnative species are currently rare, uncommon, or absent.

The value of Idaho Roadless Areas in conserving biodiversity is likely to increase as habitat loss elsewhere increases in scope and magnitude. With these increasing trends, the importance of roadless area conservation and other laws, regulations, and policies in the management of biodiversity is also likely to increase.

The roadless areas when considered alone may not be as important as when considered in combination with other land conservation laws, policies, and strategies. For example, many roadless areas in combination with wilderness areas, Nature Conservancy preserves, some NFS land allocations, national parks, or conservation easements provide large contiguous habitat blocks that provide for biodiversity conservation.

Whether the cumulative beneficial effects of the prohibitions and other past, present, and reasonably foreseeable actions would fully offset predicted future increases in land uses, land conversions, and nonnative species invasions is difficult to assess. Yet, it is possible to conclude that without the prohibitions, there would likely be an increased risk of adverse cumulative effects to biodiversity.

At some point in the future, projected habitat loss from the direct and indirect effects of increasing population growth could potentially surpass the contribution of roadless areas to biodiversity conservation. Under this scenario, habitat loss and the loss of viable plant and animal populations may be of a magnitude such that the beneficial effects of the prohibitions and other laws, regulations, and policies relative to biodiversity conservation may be lost or overwhelmed. Even in these circumstances, roadless areas would still likely convey some beneficial effects relative to conservation of individual TES species locally, regionally, and nationally.

Conclusions on cumulative effects by alternative. As population growth and associated land uses and land conversions place pressures on both NFS and non-NFS lands, the value and importance of Idaho Roadless Areas in conserving biological diversity will probably increase. In the future, habitat loss and loss of viable animal populations may be of a magnitude such that the beneficial effects of the prohibitions,

and other laws, regulations and policies relative to the conservation of native biodiversity may be lost or overwhelmed. Even under this scenario, Idaho Roadless Areas would likely still convey some beneficial effects relative to conservation of terrestrial and aquatic animal species and habitat in Idaho.

2001 Roadless Rule (No Action)

Overall, the 2001 Roadless Rule – when considered with the effects of land uses; land conversions; laws, regulations, and policies; and nonnative species invasions – would be beneficial to biological diversity, including species habitats, populations, and landscape diversity. Some of the potential beneficial effects include:

- Large contiguous blocks of habitat protected by providing habitat connectivity for a variety of species that need large connected landscapes;
- Decreased risk associated with fragmentation and isolation from timber cutting, road construction/reconstruction, and discretionary minerals activities;
- Conservation and protection of biological strongholds and other important habitats for terrestrial and aquatic animals, including TES species;
- Decreased risk associated with invasive species introductions and spread;
- Maintenance of native animal communities where non-native-species are currently rare, uncommon, or absent;
- Increased assurances that biological diversity would be conserved, both within the area and the overall landscape in which it is found;
- Provision of important components of conservation strategies for protection and recovery of federally listed proposed, threatened, endangered, and NFS Regional Forester sensitive species; and
- Maintenance or restoration of some level of natural disturbance processes at a local level and landscape levels, which are important controls for ecosystem composition, structure, and function.

Existing Plans

Because of the permissions provided in the Existing Plans – when considered with the effects of land uses; land conversions; laws, regulations, and policies; and nonnative species invasions – Existing Plans may or may not be sufficient to provide for biological diversity, including species habitats, populations and landscape diversity into the future. This assessment was based largely on the following cumulative effects:

- The projected increasing trends in population growth, deleterious land uses, land conversion, and non-native species invasion are likely to contribute to increased risks to biodiversity.

- It is likely that Federal, State, local, and private land laws, regulations, and policies will become more pivotal in conserving biodiversity.
- Climate changes may lead to less favorable habitat availability for some TES species, leading to more restricted ranges and some local extirpations of populations.

Idaho roadless rule (Proposed Action)

The Idaho Roadless Rule permissions and prohibitions – when considered with the effects of land uses; land conversions; laws, regulations and policies; and nonnative species invasions – would overall be beneficial to biological diversity, including species habitats, populations, and landscape diversity, for the same reasons listed above under the 2001 Roadless Rule.

The Idaho Roadless Rule would provide additional protections compared to the 2001 Roadless Rule on 3.1 million acres (33 percent of Idaho Roadless Areas), because the rule prohibits road construction, reconstruction or surface occupancy on these lands. It would provide similar protections on 5.2 million acres (56 percent of Idaho Roadless Areas), even though it would permit limited road construction/reconstruction to facilitate timber cutting to address forest health concerns and to reduce hazardous fuels that could affect communities. It would provide lesser protections on 0.6 million acres (0.6 percent of Idaho Roadless Areas); however, not every acre within the 0.6 million acres is likely to be affected.

The Idaho Roadless Rule would permit phosphate development on 21,000 acres (existing and unleased lands), whereas the 2001 Roadless Rule would permit development on 9,100 acres. This difference is immeasurable, within the context of Idaho Roadless Areas as a whole. The phosphate development would potentially occur on the edges of nine roadless areas, leaving the core of the roadless areas intact. Prior to development, additional environmental study would occur and any necessary protection measures would be applied.

3.10 Scenic Quality

INTRODUCTION

Scenery with natural-appearing landscapes enhances people's lives and benefits society (Driver et al. 1991). It is a primary reason that people choose to recreate on the NFS lands, and it contributes directly to real estate values in neighboring communities and residential areas. Scenic quality is based on two definable elements, landscape character and scenic integrity. Roadless areas inherently have high scenic quality because of the lack of human-induced disturbance.

The scenic quality of a forest is not static; it changes over time. To varying degrees, roads, timber cutting, insect infestations, and wildland fires all affect the scenic integrity of a landscape. Managers may influence the effects of natural events to some extent by managing vegetation with silvicultural and fuels treatments. The positive effects on scenic quality resulting from reducing the effects of these events may be offset by the negative effects of road construction and vegetative treatments. However, wildfire events, insect or disease infestations, landslides, and other natural events are considered a part of that landscape's natural processes. Such events and resultant landscape changes (even if visually unappealing) are consistent with High or Very High levels of scenic integrity.

All resource management activities in Idaho Roadless Areas strive to achieve long-term sustainable landscape character goals within the scenic integrity objectives identified in the land management planning process using the Scenery Management System (SMS) (USDA Forest Service 1996) or with establishment of visual quality objectives using the Visual Management System (USDA Forest Service 1974). These visual or scenic management objectives define allowable levels of change on specific land areas.

The basis for describing scenic quality is the SMS, as described in *Landscape Aesthetics*⁴⁷. This handbook defines a system for inventory and analysis of the aesthetic values of NFS lands and replaces the old Visual Management System. The analysis evaluates how the prohibitions and permissions for timber cutting, road construction/reconstruction, and discretionary mineral activities would affect the ability to maintain or enhance the supply of high scenic quality⁴⁸.

⁴⁷ *Landscape Aesthetics: A Handbook for Scenery Management* (USDA Forest Service 1996) defines high scenic quality and provides the framework for comparing alternatives and discussing cumulative effects. This workbook was the result of more than 20 years of landscape management field implementation; the work of dozens of researchers in fields such as landscape architecture, psychology, sociology, economics, and ecology; and guidance by regional and national landscape architects.

⁴⁸ This analysis assesses the potential for change to scenic integrity based on potential for change reflected in the various management themes or prescriptions for roadless area management. The amount of potential change is, in actuality, further constrained by the management strategy for scenic integrity objectives (SIOs) or visual quality objectives (VQOs) that are in place for each forest plan. Calculations of

The SMS identifies landscape character and scenic integrity as the basis for scenic quality. Landscape character is the overall visual impression of landscape attributes that provide a landscape with an identity and sense of place; it consists of the combination of physical, biological, and cultural attributes that make each landscape identifiable and distinct. Scenic integrity is a measure of the wholeness or completeness of the landscape, including the degree of visual deviation from the landscape character valued by constituents. Scenic integrity is a continuum ranging over five levels of integrity from Very High to Very Low. The following are definitions of the five levels (USDA 1996):

- Very High (Unaltered) – refers to landscapes where the valued landscape character is intact with only minute, if any, deviations. The existing landscape character and sense of place is expressed at the highest level.
- High (Appears Unaltered) – refers to landscapes where the valued landscape character appears intact.
- Moderate (Slightly Altered) – refers to landscapes where the valued landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the landscape character being viewed.
- Low (Moderately Altered) – refers to landscapes where the valued landscape character appears moderately altered. Deviations begin to dominate the valued landscape but they borrow valued attributes from the surrounding landscape.
- Very Low (Heavily Altered) – refers to landscapes where the valued landscape character appears heavily altered. Deviations may strongly dominate the valued landscape.

AFFECTED ENVIRONMENT

Idaho Roadless Areas generally do not carry evidence of management activities and currently have a high degree of scenic integrity. The scenic integrity of landscapes in these roadless areas is generally High or Very High, which indicates a low level of landscape modification due to a lack of high intensity management activities in the past (USDA Forest Service 2000). However, some Idaho Roadless Areas have had extensive use including cattle grazing, off-highway vehicles, timber sales, and mining; therefore, the scenic integrity has been modified and the resulting scenic integrity is considered Low. Appendix C summarizes the existing characteristics for all the Idaho Roadless Areas including scenic integrity.

existing forest plan SIOs or VQOs by roadless area and management theme have not been calculated in this analysis because they are too variable and speculative for analysis at this scale and would be analyzed during site-specific project planning. As a result, the potential for change in scenic integrity is likely considerably overstated depending on the visual objectives that are in place for any given Idaho Roadless Area. This overstatement would likely be reflected in the themes of GFRG and Backcountry that show the greatest amount of potential change.

ENVIRONMENTAL CONSEQUENCES

Effects Common to All Alternatives

The alternatives do not affect valid existing rights. Therefore, potential effects on scenery from these rights may occur within the limits of existing forest plans. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek and Mount Jefferson) on the Caribou-Targhee National Forest and are under existing lease. Some of these acres have been mined and reclaimed (the total amount is unknown); therefore, these areas exhibit a Moderate scenic value. About 1,100 acres, associated with the Smoky Canyon mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon mine expansion would affect the Sage Creek and Meade Peak roadless areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas would likely be permitted and developed sometime in the extended future (50 or more years). As these areas are mined, their scenic value would be reduced to Low (see fig. 10, open pit); however, upon the completion of mining their scenic values would be upgraded to a level commensurate with the quality of reclamation implemented (see fig. 11, reclaimed phosphate pit).

Table 3-48. Potential for change in scenic integrity under all alternatives

Roadless area management - 2001 Rule	Current acres in High to Very High scenic integrity	Acres maintained in High to Very High scenic integrity	Acres potentially reduced to Low scenic integrity ¹
	9,304,200	9,295,100	9,100

¹Acres associated with existing phosphate leasing on the Caribou-Targhee National Forest. A small portion of the 9,100 acres has already been mined, but the amount is unknown.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule is anticipated to maintain the current high levels of scenic integrity in the roadless areas. The 2001 Roadless Rule would allow road construction under limited situations. About 15 miles of road construction/reconstruction are projected to occur over the next 15 years. It is anticipated that the amount of change from such new road construction would have a negligible change on the current High and Very High scenic integrity in most roadless areas. In those few areas where roads are constructed, the scenic integrity could change from High to Low or Moderate. It is likely these changes would occur on the fringe of a roadless area.

The 2001 Roadless Rule would allow limited cutting of small-diameter material for specific purposes. About 1,500 acres are anticipated to be treated over the next 15 years. The intensity of change associated with such activities is not expected to create a measurable change in scenic integrity. The magnitude or amount of area that would potentially be affected is also considered to be relatively minor. Vegetation

management would result in short-term changes in scenic quality. However, the amount and types of timber cutting allowed would enhance vegetative health and reduce fuel loading, thereby providing protection from pests, insects, diseases, and large fires. Over the long term, scenic integrity could be maintained or improved with these activities (USDA Forest Service 2000, pg 3-229). Based on the anticipated intensity and magnitude of change from potential vegetation management, it is anticipated that the most of the current High and Very High scenic integrity within all of the Idaho Roadless Areas would be retained, except for the 9,100 acres associated with the existing phosphate leasing on the Caribou-Targhee National Forest as discussed above.

Vegetation management is anticipated to be limited because of road construction limitations and limitations on small-diameter tree cutting, both elements rendering vegetation management to be costly and of low economic value. Such vegetation management is anticipated to be minimal and would retain the High scenic integrity of the areas.

Existing Plans

The potential effects on scenic quality varies according to the overall management prescriptions or themes assigned to a given Idaho Roadless Area. Appendix B provides a crosswalk of the Existing Plan prescriptions and the Idaho Roadless Rule themes. Table 3-49 presents potential for change in scenic integrity under the Existing Plans.

Table 3-49. Potential for change in scenic integrity under the Existing Plans

Theme	Acres maintained in High to Very High scenic integrity	Acres available for reduction to Moderate scenic integrity.	Acres likely changed to Moderate or Low scenic integrity. ¹
Wild Land Recreation	1,320,900		
Primitive	2,130,000		1,300
Backcountry	0	4,243,700	800
GFRG	0	1,251,100	11,300
Total ²	3,451,000	5,494,800	13,400

¹ Based the 13,400 acres of known phosphate deposits not yet under lease.

² An additional 345,100 acres in Idaho Roadless Areas are in national wild and scenic rivers or other special designations and would not be affected by the management direction. Scenic integrity in these areas would remain High to Very High.

Management prescriptions similar to Wild Land Recreation are likely to retain their High to Very High scenic integrity because limited activity is permitted to occur in these areas. Generally natural processes dominate. Prescriptions similar to Primitive generally prohibit road construction and permit very limited timber cutting; therefore, these areas are also likely to retain their High to Very High scenic integrity (table 3-49).

Management prescriptions similar to Backcountry generally permit road construction/reconstruction for a few purposes and timber cutting generally to improve wildlife or other important habitat components. In GFRG areas, road construction and reconstruction are permissible, as is timber cutting for a variety of purposes. About 180

miles of road are projected to be constructed/reconstructed over the next 15 years, and timber cutting is projected to occur on 42,000 acres.

Scenic quality could be reduced in areas where road construction/reconstruction occurs, especially in the 1.2 million acres of GFRG. In areas with prescriptions similar to the Backcountry theme, it is likely that scenic quality would not be reduced as much because these prescriptions generally encourage the use of temporary roads (short-term impact) and retention of more trees because of wildlife considerations. There may be some beneficial effects on scenic quality from silvicultural and fuels treatments that reduce the potential magnitude of natural events such as insect infestations and wildland fires. Also, potential effects would be moderated because of priority treatment of hazardous fuels around communities and by applying SIOs and VQOs from forest plans.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 years+).

In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest within the Bald Mountain, Bear Creek and Poker Creek roadless areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased.

As these areas are mined (over the next 50 or more years), their scenic value would be reduced to Low; however, upon the completion of mining their scenic values would be upgraded to a level commensurate with the quality of reclamation implemented.

Existing Plans would permit road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half of the roadless areas in management prescriptions similar to Backcountry and GFRG have high to moderate potential it is likely some development would eventually occur. Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources), which would reduce the scenic integrity of the roadless areas affected.

Idaho Roadless Rule (Proposed Action)

The potential effects on scenic quality vary according to the overall management theme assigned to a given roadless area (appendix E). Road construction/reconstruction is

prohibited in the Wild Land Recreation, Primitive, and SAHTS themes; and timber cutting is permitted under limited circumstances in the Primitive and SAHTS themes; therefore, scenic integrity would be maintained at the High to Very High levels (table 3-50).

Table 3-50. Potential for change in scenic integrity under the Idaho Roadless Rule

Theme	Acres maintained in High to Very High scenic integrity	Acres available for reduction to Moderate scenic integrity.	Acres likely reduced to Moderate or Low scenic integrity.¹
Wild Land Recreation	1,378,600	0	0
Primitive	1,656,300	0	0
SAHTS	68,600	0	0
Backcountry	0	5,245,300	800
GFRG	0	598,200	11,300
Total	3,123,500²	5,843,500	12,100

¹ About 1,300 acres of known unleased phosphate deposits are in Primitive and would not be developed because road construction/reconstruction is not allowed. About 11,300 acres of unleased phosphate areas could be developed over an extended period of time.

² An additional 345,100 acres in Idaho Roadless Areas are in national wild and scenic rivers or other special designations and would not be affected by the management direction. Scenic integrity in these areas would remain High to Very High.

Limited timber cutting and road construction would be permissible in the Backcountry theme, primarily to restore ecosystems and reduce the effects of uncharacteristic and unwanted wildland fires. Road construction/reconstruction and timber cutting would be permissible in GFRG. About 60 miles of road are projected to be constructed over the next 15 years, and timber cutting is projected to occur on about 12,000 acres over the next 15 years.

The Idaho Roadless Rule encourages any necessary new roads to be temporary in nature. Any roads constructed would likely reduce the scenic integrity; however, if they are temporary, these roads would revegetate over time and the scenic integrity would improve. Timber cutting in the Backcountry theme must maintain at least one or more of the roadless area characteristics. It is assumed that any timber cutting would be light on the land and focus on what is left versus what is taken. Timber cutting could modify scenic integrity at least in the short term, but is assumed to maintain at least a moderate level of scenic quality. It is likely that cutting would be spread across multiple roadless areas across the State, thus reducing the potential change in any one Idaho Roadless Area. Also, potential effects would be moderated because of priority treatment of hazardous fuels around communities and by applying SIOs and VQOs from forest plans.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee NF. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). As these areas are mined, their scenic values would be gradually changed to a level commensurate with the quality of reclamation implemented (see fig. 11, reclaimed mine).

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore this area would likely not be developed (see Minerals section). Scenic quality would not be affected on these lands.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme (609,500 acres). It is unknown where and to what degree geothermal resources would be developed; however, about 7 percent of the roadless areas are located in GFRG and 4 percent (382,900 acres) have slopes less than 40 percent. It is likely that some development would eventually occur on these lands. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a descriptions of general development of geothermal resources). This development would reduce the scenic quality on these lands; however, no information is available of where or when such development would occur. Site-specific analysis would be completed prior to authorizing exploration and development.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. However, lands in these roadless areas are in the Backcountry or Primitive themes; therefore, development would be prohibited and there would be no effect on scenic quality.

CUMULATIVE EFFECTS

The roadless area management themes for the alternatives apply only to roadless areas in Idaho. Effects on scenic integrity would be confined to those roadless areas. The cumulative effects analysis area consists of the network of roadless areas within the State of Idaho consisting of 9,304,200 acres.

Programmatic actions described in appendix N would have no effect on scenic integrity because these actions do not prescribe or identify site-specific actions. The NFP, HFI, HFRA and Energy Plan describe actions necessary to meet their objectives, but they do not dictate where the actions would occur. The analysis above projected activities that could occur in response to these policies, including timber cutting and discretionary mineral development.

2001 Roadless Rule (No Action)

Past actions and events have shaped the current landscape. The current High to Very High scenic integrity is a reflection of the low level of active management in these areas. It is anticipated that current or planned actions and foreseeable future actions occurring within the roadless areas would generally retain the current High to Very High scenic quality designations. The potential for cumulative effects on scenic integrity is limited by the requirements of the 2001 Roadless Rule; as a result, the cumulative effects are the same as the environmental consequences described in the previous section.

Existing Plans

The roadless area management prescriptions for Existing Plans are a direct reflection of those management prescriptions for the affected Idaho Roadless Areas. Effects on scenic integrity would be as disclosed in those final EISs associated with those plans and in the analysis in the previous section. Cumulatively, scenic integrity is likely to be reduced on a total of 22,500 acres in nine roadless areas because of phosphate mining currently under lease and areas with the potential to be leased. Additional areas may also be affected within management prescriptions similar to the Backcountry and GFRG themes associated with long term development of geothermal energy.

Idaho Roadless Rule (Proposed Action)

Past actions and events have shaped the current landscape. The current High to Very High scenic integrity designation is a reflection of the low level of active management in these areas. Future actions would be guided by the management themes for this alternative, and by existing plan and handbook direction. Cumulatively scenic integrity is likely to be reduced on 21,200 acres nine roadless areas because of phosphate mining currently under lease and areas with the potential to be leased. Additional areas may also be affected within the GFRG theme associated with long term development of geothermal energy.

3.11 Recreation

INTRODUCTION

Idaho Roadless Areas often provide outstanding dispersed recreation opportunities, such as camping, canoeing, cross-country skiing, fishing, hiking, hunting, picnicking, and wildlife viewing. The recreation analysis evaluates the potential environmental consequences to dispersed recreation, including the ability to provide Primitive, Semi-Primitive Non-Motorized, and Semi-Primitive Motorized classes of recreation and the potential changes to those classes. The analysis also evaluates the potential consequences on developed recreation and recreation special uses.

Many definitions of recreation exist, each emphasizing a slightly different aspect of an enjoyable pursuit. The basic premise behind recreation is the pleasurable and constructive use of one's spare time. This sense of refreshment, relaxation, and the active pursuit of pleasure are realized through participation in recreational activities suited to individual preference. The top five activities pursued on NFS lands are viewing natural features, general relaxation, hiking, viewing wildlife, and driving for pleasure (USDA Forest Service 2004e).

This analysis uses the recreation opportunity spectrum (ROS) as the basis for analyzing the effects and evaluating the possible changes to Idaho Roadless Areas available for dispersed recreation, developed recreation, and special uses. The disclosed environmental consequences are based on factors such as trends in recreation use; the prohibitions and permissions for timber cutting, road construction/reconstruction, and discretionary mineral activities; and the availability of future Idaho Roadless Areas to meet growing future demands.

The ROS provides a framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The ROS is divided into six classes arranged along a continuum: Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Rural, and Urban (USDA Forest Service 1986). The basic assumption underlying the ROS is that quality outdoor recreation is assured by providing a diverse set of opportunities. Definitions of the ROS classes are as follows:

Primitive – an area that is essentially an unmodified natural environment of large size.

Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

Semi-Primitive Non-Motorized (SPNM) – an area that has a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but they are subtle. Motorized use is not permitted.

Semi-Primitive Motorized (SPM) – an area that has a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present but is subtle. Motorized use is permitted.

Roaded Natural – an area that has predominantly natural-appearing environments with moderate evidences of the sights and sounds of humans. Such evidences are usually in harmony with the natural environment. Interaction between users may be low to moderate, but evidence of other users is prevalent. Resource modification and practices are evident but harmonize with the natural environment. Conventional motorized use is provided for construction standards and facilities design.

Rural - an area with a substantially modified natural environment. Sights and sounds of humans are readily evident, and the interaction between users is moderate to high. A considerable number of facilities are designed for use by large numbers of people. Facilities for intensified motorized use and parking are available.

Urban – a substantially urbanized environment, although the background may have natural appearing elements. Affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor vehicle use and parking are available. Regimentation and controls are obvious and numerous.

When compared with characteristics of Idaho Roadless Areas, ROS classes Primitive, SPNM, and SPM are most representative of the outdoor recreation environments, activities, and experience opportunities available. However, some portions of Idaho's roadless areas may provide more of a Roaded Natural environment because of the presence of off-highway vehicle (OHV) trails and users.

Dispersed recreation is generally associated with activities that do not require constructed facilities (except for trails). Non-motorized activities (such as hiking, biking, and backcountry skiing) and motorized activities (such as snowmobiling and OHV use) best represent dispersed recreation; thus, dispersed recreation is generally associated with Primitive, SPNM, and SPM ROS classes.

Developed recreation is typically associated with developed or modified settings, generally in SPM, Roaded Natural, Rural, and Urban ROS classes; it includes camping in constructed campgrounds, developed opportunities for OHV use, and downhill skiing at a resort.

Special use permits generally authorize a broad range of commercial recreational activities, both motorized and non-motorized, in dispersed and developed settings. Special use permits are issued for almost every type of outdoor recreational activities and can occur in every ROS class setting from Primitive to Urban.

DISPERSED RECREATION: AFFECTED ENVIRONMENT

Much of the dispersed recreational value of Idaho Roadless Areas lies in their unique Primitive, SPNM, and SPM recreation opportunities. They provide settings for dispersed recreational activities that are prohibited in designated wilderness areas and not readily available in developed or modified settings with system roads. For example, wilderness areas prohibit, with few exceptions, mechanized and motorized uses such as OHVs, mountain bikes, and snowmobiles. Wheelchair or handicapped access is very limited. In addition, Idaho Roadless Areas generally have a low level of human-induced change. However, some Idaho Roadless Areas have had extensive use including cattle grazing, OHVs, timber sales, and mining; therefore, these roadless areas provide a different type of dispersed recreation (see appendix C).

Four of the top five activities pursued on NFS lands (viewing natural features, general relaxation, hiking, viewing wildlife, and driving for pleasure (USDA Forest Service 2004e), are generally associated with dispersed recreation. The demand for Primitive, SPNM, and SPM classes and dispersed recreation opportunities is increasing (Cordell et al. 1999a and b).

Idaho Roadless Areas provide some of the most productive fishing and hunting opportunities in the United States (Curley et al. 2004). They also provide quality and critical habitat for Chinook salmon, steelhead, and cutthroat trout, which are popular recreational fishing species. The highest success rates for both deer and elk hunters Statewide (Curley et al. 2004 and IDFG 2005) can be found in Idaho Roadless Areas. While hunting and fishing can occur in areas managed for the more developed end of the ROS class spectrum, they typically provide a much different setting and experiences and in many cases result in a lower success rates.

Idaho Roadless Areas also provide outstanding opportunities for other dispersed recreation activities, such as hiking, camping, horseback riding, picnicking, wildlife viewing, cross-country skiing, and canoeing.

DISPERSED RECREATION: ENVIRONMENTAL CONSEQUENCES

All Alternatives

Effects from road construction/reconstruction. Road construction/reconstruction may change dispersed recreation settings by changing the appearance and level of activity in an area. If the construction/reconstruction occurs in a Roaded Natural setting, then the level of change may be minor because the area already has moderate levels of the sights and sounds of humans. If the construction/reconstruction occurs in a SPM setting, then the effects would depend on the type and extent of disturbance. For example, if temporary roads were constructed, then the change in setting may be temporary in nature; sights and sounds would be evident during the activity but would decrease over time as recovery/revegetation of the road occurs. If roads were constructed or

reconstructed in SPMN, then the change in the dispersed recreation experience could be more long lasting and evident.

Timber cutting. Timber cutting would not change the dispersed recreation opportunities within an area; however, timber cutting could change the natural appearance of an area until the area regenerates. The changes to the appearance of an area depend on the extent and intensity of the timber cutting. For example, even-aged management such as clearcutting 50 acres would change the natural appearing landscape because all trees are removed and a large opening is created. Uneven-aged management, such as group shelterwoods, may remove all trees within small areas (1 or 2 acres) and thin the surrounding area, resulting in a natural-appearing environment.

Existing mineral and energy leases. None of the alternatives would prohibit road construction or reconstruction associated with developing existing leases. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres, associated with the Smoky Canyon mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon mine expansion would affect the Sage Creek and Meade Peak roadless areas. Dispersed recreation opportunities would likely be excluded from these 1,100 acres during the development and operation of the mine.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas would likely be permitted and developed sometime in the extended future (50 or more years). As these areas are developed, recreational opportunities would be excluded until the sites are reclaimed.

Dispersed OHV use. About 1,800 miles of road exist in Idaho Roadless Areas, some of which were created by OHV users. Dispersed OHV use is guided by Existing Plan direction and travel planning. Neither the 2001 Roadless Rule nor the Idaho Roadless Rule provides direction on where and when OHV use would be permissible in roadless areas; therefore, there would be no effect on current OHV use in Idaho Roadless Areas.

2001 ROADLESS RULE (NO ACTION)

The 2001 Roadless Rule prohibits road construction and reconstruction in Idaho Roadless Areas (9.3 million acres) except under very limited circumstances. The limited road construction and reconstruction could change the dispersed recreation opportunities within a given area. Although all 9.3 million acres would be available for development, it is unlikely all areas would be roaded because of the very limited exceptions for road construction and reconstruction. About 15 miles of road are projected to be constructed/reconstructed over the foreseeable future (next 15 years). Roads are most likely to be constructed/reconstructed in areas previously roaded (Roaded Natural) or in SPM because these areas are generally the closest to the edge of boundary of roadless area, and because these ROS classes allow for motorized use. This

level of disturbance would not measurably change the dispersed recreation opportunities in any given area.

The 2001 Roadless Rule prohibits timber cutting, with a few exceptions. Generally timber cutting would retain roadless characteristics and would be natural-appearing, especially after a couple of years when the vegetation has regrown. Timber cutting is projected to occur on about 1,500 acres over the next 15 years. This level of activity would not measurably alter roadless area characteristics, especially over time.

The 2001 Roadless Rule also prohibits road construction and reconstruction associated with new mineral and energy leases. About 13,400 acres of known phosphate deposits are currently not leased and would not be developed; road access would also not be provided for geothermal development. These areas would retain their roadless characteristics and provide dispersed recreation opportunities.

Idaho Roadless Areas would continue to provide excellent habitat for wildlife and fisheries; therefore, hunting and fishing opportunities would continue.

EXISTING PLANS

Under Existing Plans road construction/reconstruction, timber cutting, and discretionary mineral activities are generally not permitted on about 3.45 million acres of Idaho Roadless Areas. These areas include management prescriptions similar to the Wild Land Recreation and Primitive themes and similar to forest plan special areas. Some timber cutting could occur in the Primitive theme but would likely not be done to a degree that would change the roadless character.

About 4.24 million acres are in management prescriptions similar to the Backcountry theme; generally some level of road construction/reconstruction and timber cutting is permitted (appendix B). About 1.2 million acres are in management prescriptions similar to the GFRG theme. About 180 miles are projected to be constructed/reconstructed over the next 15 years, and timber cutting is projected to occur on 42,000 acres. Most of the activity would likely occur in the GFRG areas, with lesser amounts in Backcountry. This level of road construction/reconstruction could change dispersed recreation opportunity settings in some areas from a SPM to Roaded Natural; however, if roads are decommissioned after use then the change would be more temporary in nature. About a quarter of the roads (45 miles) are projected to be decommissioned.

Timber cutting on 42,000 acres over 15 years may change the natural appearance of some areas for a period of time until the area regenerates. The type of cutting would depend on the Existing Plan prescriptions and visual quality requirements (see chapter 3, Scenery). Based on this level of cutting, less than 1 percent of the roadless areas would be affected over 15 years. Dispersed recreation opportunities would not change as a result of timber cutting, but the feeling of remoteness and solitude may change for a period of time.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 years or more). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest within the Bald Mountain, Bear Creek and Poker Creek roadless areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased. It is likely to take an extremely long time to develop these sites (50 or more years), but if they are developed then dispersed recreation opportunities would not be available on these areas.

Existing Plans would permit road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG (appendix B). It is unknown where and to what degree geothermal resources would be developed⁴⁹; however, because about half of the Idaho Roadless Areas in these themes have high to moderate potential for geothermal resources, it is likely that some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources), which would change the type of dispersed recreation opportunities of the roadless areas affected. Site-specific analysis would be conducted prior to any geothermal exploration or development.

Hunting and fishing opportunities could be affected in locations where phosphate or geothermal development occurs because of the level of disturbance associated with these activities. Hunting and fishing opportunities likely would not change in areas where timber cutting and associated road construction occurs because of the dispersed nature of these activities, recovery of vegetative conditions, and use of temporary roads.

THE IDAHO ROADLESS RULE (PROPOSED ACTION)

Under the Idaho Roadless Rule, timber cutting, road construction/reconstruction, and discretionary mineral activities would generally not be permitted on about 3.1 million acres of Idaho Roadless Areas. These areas include the Wild Land Recreation, SAHTS, and Primitive themes, as well as forest plan special areas. Some timber cutting could occur in the Primitive theme but would likely not be done to a degree that would change the roadless character.

About 5.25 million acres are in the Backcountry theme. Road construction/reconstruction and timber cutting would be permissible under limited exceptions.

⁴⁹ See Minerals section for further information

About 0.6 million acres are in the GFRG theme. About 60 miles are projected to be constructed/reconstructed over the next 15 years, and timber cutting is projected to occur on 12,000 acres. Most of the activity would likely occur in the GFRG theme, with lesser amounts in Backcountry. This level of road construction/reconstruction could change dispersed recreation opportunity settings in some areas from a SPM to Roaded Natural; however, if roads are decommissioned after use then the change would be more temporary in nature. About 75 percent of the roads (45 miles) are projected to be decommissioned (includes both temporary and permanent). The Idaho Roadless Rule would require the use of temporary roads unless there is specific reason to warrant a permanent road.

Timber cutting on 12,000 acres over 15 years may change the natural appearance of some areas for a period of time until the area regenerates. Under the Idaho Roadless Rule, timber cutting would be done only for ecosystem restoration or fuels management, with the intent of focusing on what is left, not what is removed. Based on this level of cutting, less than a half of 1 percent of the roadless areas would be affected over 15 years. Dispersed recreation opportunities would not change as a result of timber cutting but the feeling of remoteness and solitude may change in some locations for a period of time.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 years or more years). When and if these sites are developed then dispersed recreation opportunities would not be available on these areas.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore this area would likely not be developed (see Minerals section); and there would be no effect to dispersed recreation opportunities found in this area.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. Development could only occur within the GFRG theme, which is designated only on the Boise, Caribou, Idaho Panhandle, Payette, Salmon, Sawtooth and Targhee National Forests. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of

general development of geothermal resources), which would reduce dispersed recreation opportunities of the roadless areas affected. Site-specific analysis would be conducted prior to any geothermal exploration or development. About 93 to 96 percent of the roadless areas would not see any exploration or development.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in the Backcountry or Primitive themes which prohibit road construction or reconstruction to access mineral resources; therefore, they would not be developed under the Idaho Roadless Rule.⁵⁰ There would be no effect on dispersed recreation opportunities in these areas.

Hunting and fishing opportunities could be affected in locations where phosphate or geothermal development occurs because of the level of disturbance associated with these activities. Hunting and fishing opportunities likely would not change in areas where timber cutting and associated road construction occurs because of the dispersed nature of these activities, recovery of vegetative conditions, and use of temporary roads.

DEVELOPED RECREATION: AFFECTED ENVIRONMENT

Of the 9.3 million acres of Idaho Roadless Areas, less than 5 percent contain authorized roads, recreation sites, and other facilities. These areas reflect a more developed end of the ROS.

Idaho projects population growth of 52 percent from 2001 to 2030. Idaho will continue to be one of the Nation's fastest growing States, and a major contributor to that growth will be people over the age of 64 (Idaho Commerce and Labor 2005). This general increase in total population and in individuals over 64 years will place a greater demand on developed recreation. The largest age group of forest recreationists nationwide is 40–49 years (USDA Forest Service 2004e).

Camping and picnicking at developed sites, driving for pleasure, and visiting interpretive sites and visitor centers are examples of activities associated with the developed end of the ROS. The more developed ROS classes often involve a greater social interaction with other people, higher levels of managerial control, and more evidence of human activity. Traditionally, expansion of these developed recreation opportunities occurred by increasing the standard of existing facilities or expanding into roadless areas, ultimately shifting the ROS classes from Primitive, SPNM, and SPM to Roaded Natural or Rural. This shift reduces the amount of Primitive and SPNM settings and increases the value of the remaining, more remote, primitive settings generally associated with roadless areas.

⁵⁰ The Backcountry theme allows for surface occupancy, but development is unlikely to occur because of economic limitations and the availability of geothermal resources in other areas (see Minerals section).

DEVELOPED RECREATION: ENVIRONMENTAL CONSEQUENCES

Most developed recreation use on NFS lands depends on permanent roads for access to developed sites. Increased recreation use of all types will increase demand for more roads and more developed sites. For example, a popular dispersed recreation area near a road may become a developed site to minimize environmental damage and manage the number of people; popular backcountry destination areas may require new trailheads; or as the NFS road system stabilizes, increased use may require reconstruction to a higher level of design. As Idaho's population growth continues to increase, demands for opportunities at the more developed end of the ROS, additional pressure would occur in existing areas available for development or road-based recreation opportunities.

Historically, developed recreation followed roads built for timber, fire, mining, or other resource management activities. As use became heavy and demand for amenities increased, some areas became suitable for developed sites, resulting in a wide dispersion of small- to medium-sized developed sites.

In the foreseeable future, recreation budgets are projected to remain low. As a consequence, the Forest Service is developing facility master plans that analyze the benefit and costs of managing each facility. The plans' recommendations are trending toward elimination of low-use camping sites and a focus on improvement and maintenance of existing, popular developed sites. Most of these sites are in the developed portions of national forests, near lakes and streams and accessed by roads. Any developed portions of Idaho Roadless Areas would most likely have the roads obliterated or gated and would not lead to additional developed recreation.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction/reconstruction to access existing or new developed recreation sites, unless they are associated with a special use permit issued prior to the rule. The 2001 Roadless Rule limits opportunities for new developed recreation within Idaho Roadless Areas; however, there are no reasonably foreseeable developed recreation actions that would be affected at this time.

Existing Plans

Under Existing Plans, road construction/reconstruction are generally not permitted on about 3.45 million acres of Idaho Roadless Areas. These areas include management prescriptions similar to the Wild Land Recreation themes, and similar to some forest plan special areas. Some road construction/reconstruction to provide roaded access to developed recreation may be permitted in Primitive themes in certain situations.

Existing Plans generally permit road construction/reconstruction in management prescriptions similar to the Backcountry and GFRG themes. Existing Plans would permit roaded access for developed recreation in Idaho Roadless Areas; however, there are no foreseeable proposals for developed recreation sites at this time. In addition, with

agency budgets for facilities being reduced, it is unlikely that roads would be constructed or reconstructed to access these sites.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, road construction/reconstruction would not be permitted to provide roaded access for developed recreation on about 8.5 million acres of Idaho Roadless Areas, unless the sites are associated with an existing special use permit. No roads could be constructed/reconstructed in the Wild Land Recreation, Primitive, SAHTS, and Backcountry themes for recreation development.

Road construction and reconstruction are permitted in the GFRG theme (0.6 million acres), including to provide roaded access to developed recreation. However, no GFRG is located on the Challis, Clearwater, Nez Perce or Wallowa-Whitman National Forests; therefore, opportunities would be limited on these units. However, there are no reasonably foreseeable developed recreation actions that would be affected at this time.

RECREATION SPECIAL USES: AFFECTED ENVIRONMENT

Outfitters and Guides. Visitors to national forests frequently turn to others to facilitate their recreation experience, which may come in the form of lodging, rental equipment, or guiding services. Recreation special use permits are used by Forest Service managers to authorize others to provide these desired services. Permits form a legally binding relationship between the Forest Service and other entities, primarily from the private sector.

Currently there are 430 outfitter and guide special use authorizations in Idaho (USDA Forest Service 2006f) and it is reasonable to assume that as Idaho's population grows and ages, the demand for these guided experiences will also continue to increase. Many people are capable of total self-sufficiency in conducting their activity. Others often want or need assistance to experience the outdoors either for their convenience or to help ensure their safety. Furthermore, people with disabilities, first-time visitors, and visitors from out-of-State often choose outfitters and guides to gain access to opportunities, experiences, and settings that would otherwise be unavailable to them.

Idaho outfitters and guides provide activities such as sightseeing, hunting, fishing, and rafting. Many of these activities or recreation opportunities are authorized by special use permits and occur in roadless areas. Rivers within Idaho Roadless Areas provide high quality whitewater rafting. Outfitters and guides help visitors enjoy high quality experiences as an extension of the Forest Service's mission. Even though they provide a small percentage of the total recreation visitor days that occur on national forests, they provide a great benefit to the State's economy and especially to the economy of communities where outfitters and guides are based.

Outfitting and guiding activities in Idaho Roadless Areas usually provide recreation opportunities for an unconfined type of outdoor recreation experience, free of common urban distractions. In areas managed as Primitive and SPNM, opportunities such as

hiking, boating, caving, mountaineering, hunting, horseback riding, fishing, cross-country skiing, and mountain biking are offered. Areas managed as SPM offer additional opportunities such as motorized boating; snowmobiling; OHV driving (motorcycle, ATV, or 4-by-4); and aircraft transport to remote areas.

The need for a particular type of special use authorization is determined in the forest plan or by user demand. For many communities adjacent to public lands, recreation opportunities provide the potential to increase and diversify their economies. Chambers of commerce, visitor bureaus, and businesses advertise these areas for the diverse opportunities they provide for recreation enjoyment. The growth and use of the Internet provides current information to everyone about these once remote recreation areas and the opportunities they provide.

Ski Resorts. The primary developed recreational use requiring an authorization on NFS lands is ski resorts. There are 134 resorts operating on NFS lands nationally that receive an estimated 30 million skier visitors per year (National Ski Area Association 2004). There are 18 ski resorts in Idaho, of which Idaho national forests play host to nine resorts. These nine resorts receive an estimated 1.3 million ski visits (4 percent).

Ski areas undoubtedly provide an important developed recreation experience on NFS lands. During the 2005/06 season, national skier/snowboarder visits hit an all-time record of 58.8 million visits, up 3.3 percent from the previous season and up 2 percent from the previous record set in 2002/03 (RRC Associates 2006). With the population growth in many of the key western ski States, as well as overall income growth, the rising ski area visitor trend is projected to continue into the foreseeable future. The settings, experience, and activities usually associated with ski areas are more in line with the developed end of the ROS. Much of the NFS land adjacent to ski areas in Idaho is roadless and falls into the SPNM or SPM ROS classes. Expansion of ski areas could directly affect the adjacent NFS lands' roadless characteristics and move these areas' ROS classes to the more developed end of the spectrum. Ski area expansions can also provide positive economic effects on the surrounding area, while at the same time changing the area's recreational experiences. Summer use in and around ski resorts is also growing, which could push the ROS classes to the more developed end of the spectrum.

RECREATION SPECIAL USES: ENVIRONMENTAL CONSEQUENCES

All Alternatives

All decisions regarding existing and future special use permits would be project-specific and require compliance with all environmental regulations. Activities undertaken pursuant to existing permits would be unaffected by this programmatic action. Recreational special use permits occur in every ROS class and setting found in NFS land. Processing and administering special use permits would be governed by forest plans.

Proposed recreation developments such as expansion of ski areas or recreation resorts into Idaho Roadless Areas would be allowed to continue under existing Forest Service procedures if special use permits are in existence prior to the adoption of any direction and the proposed activities or expansion occur within the boundaries established by the special use authorization.

Minerals development associated with the existing Smokey Canyon phosphate mine on the Caribou portion of the Caribou-Targhee National Forest has the potential to remove 1,100 acres of SPM ROS class from all recreational opportunities until reclaimed; however, there are no anticipated effects on any special use activities associated with recreation providers. An additional 8,000 acres of existing phosphate lease areas within six roadless areas (Dry Ridge, Huckleberry, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) could be developed over an extended period of time (50 or more years). All recreational opportunities would be foregone as these areas are developed.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction/reconstruction and timber cutting, with a few exceptions. Most roadless areas would retain their roadless characteristics and any foreseeable activity would have minimal effect on outfitter and guide services in roadless areas. Outfitting and guiding related to hunting and fishing would not be affected because there is no anticipated change to big game or fisheries.

In addition, the 2001 Roadless Rule prohibits road construction/reconstruction in a roadless area to provide roaded access to a ski area; therefore, there is no potential to develop or expand ski areas that require roaded access in Idaho Roadless Areas. However, at this time, there are no foreseeable expansions or new developments that would be affected.

Existing Plans

Under Existing Plans road construction/reconstruction are generally not permitted on about 3.45 million acres of Idaho Roadless Areas. These areas include management prescriptions similar to the Wild Land Recreation and Primitive themes, and similar to forest plan special areas. These areas would retain their roadless characteristics and there would be little to no effect on existing outfitting and guiding services.

About 4.24 million acres are in management prescriptions similar to the Backcountry theme. Road construction/reconstruction and timber cutting are permissible in many situations (appendix B). About 1.2 million acres are in management prescriptions similar to the GFRG theme. Road construction/reconstruction and timber cutting are permissible in these areas. About 180 miles are projected to be constructed/reconstructed over the next 15 years, and timber cutting is projected to occur on 42,000 acres. These activities could change recreational experiences but should not affect outfitting and guiding services or opportunities because of the dispersed nature of these activities, recovery of vegetative conditions, and use of temporary roads.

Management prescriptions similar to Backcountry generally would permit road construction/reconstruction to provide roaded access for new ski area development or expansion. Road construction/reconstruction is permissible to provide roaded access for new ski area development or expansion in management prescriptions similar to the GFRG theme (1.2 million acres). However, at this time there are no foreseeable ski area expansions or developments in Idaho Roadless Areas.

The Idaho Roadless Rule (Proposed Action)

Under the Idaho Roadless Rule, road construction/reconstruction are generally not permissible on about 3.45 million acres of Idaho Roadless Areas. These areas include the Wild Land Recreation, Primitive, and SAHTS themes, as well as forest plan special areas. These areas would retain their roadless characteristics and there would be little to no effect on existing outfitting and guiding services.

About 5.25 million acres are in the Backcountry theme, where road construction/reconstruction and timber cutting would be permissible in limited situations. About 0.6 million acres are in the GFRG theme, where road construction/reconstruction and timber cutting would be permissible. About 60 miles are projected to be constructed/reconstructed over the next 15 years, and timber cutting is projected to occur on 12,000 acres. These activities could change recreational experiences but should not affect outfitting and guiding services and opportunities because of the dispersed nature of the activities, recovery of vegetation, and the emphasis on the use of temporary roads.

Road construction/reconstruction would be prohibited in the Backcountry theme for development or expansion of existing special use permits outside permit boundaries; therefore, this could limit ski areas expansion and development. However, there are no foreseeable expansions or developments at this time.

Road construction/reconstruction would be permissible in the GFRG theme (609,500 acres). Ski area expansion and development could occur in these areas, although none has been identified as reasonably foreseeable at this time. Under the Idaho Roadless Rule, no GFRG was designated on the Challis, Clearwater, Nez Perce, or Wallowa-Whitman National Forests; therefore, new ski area opportunities that need roaded access would be precluded on these forests (if within a roadless area).

CUMULATIVE EFFECTS

There are approximately 53 million acres of land in Idaho; about 60 percent are in federal ownership. A variety of recreational opportunities are provided on these lands. Conserving Idaho Roadless Areas would have mixed effects on recreation activities. Idaho Roadless Areas have traditionally been viewed as places where future developed recreation, such as resort development, may potentially expand. A prohibition on road construction and reconstruction in Idaho Roadless Areas would maintain the current recreation land availability, while preventing road-based recreational developments.

The effects on dispersed recreation opportunities are especially mixed. Currently, roadless areas are seen as important places where dispersed motorized and mechanized uses may sometimes occur. However, as motorized recreation expands into roadless areas, there are direct conflicts with other users who may be seeking quiet and solitude. Motorized and mechanized uses can also conflict with other resources including soil and water protection and plant and animal habitat quality. Maintaining a balance between competing uses in roadless areas has been increasingly difficult, as large areas available for dispersed recreation decline due to development.

Decisions made through travel planning could affect the amount of area available for motorized and non-motorized travel and indirectly affect dispersed recreation opportunities. If roads cannot be constructed in Idaho Roadless Areas to facilitate recreation opportunities then additional pressures could be placed outside roadless areas. However, as noted earlier, recreation budgets are declining and the Agency is beginning to review the recreation facility master planning which would focus resources on the most appropriate recreation opportunities to meet changing public desires and demands.

Actions by other land management agencies can be important factors in affecting demand for recreation opportunities on Idaho Roadless Areas. The National Park Service continues to develop management direction for snowmobiles in Yellowstone National Park. If the amount of snowmobile use (generally associated with SPM ROS class) is reduced from its current level, additional pressure may be placed on the Forest Service to accommodate this displaced use on NFS lands. Other programmatic decisions as described in Appendix N are likely to have little to no additional cumulative effect on recreation resources.

3.12 Wilderness

INTRODUCTION

In 1964, Congress established a National Wilderness Preservation System, composed of federally owned areas designated by Congress as “wilderness areas” (16 U.S.C. 1131–1136, 78 Stat 890). A wilderness is recognized as an area “where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” Wilderness areas generally appear to be affected by the forces of nature; have opportunities for primitive and unconfined recreation; are of sufficient size (typically greater than 5,000 acres) to be managed as wilderness; and contain other ecological, geological, scientific, educational, scenic or historical values. Wilderness areas are managed to protect natural conditions and primeval character; motorized equipment and transport, developments, and commercial enterprise are prohibited.

As part of the forest planning process, potential wilderness areas are identified (FSH 1909.12, Chapter 70) using a three-step process: (1) identifying lands that satisfy the definition of wilderness found in section 2c of the 1964 Wilderness Act; (2) evaluating lands as to their wilderness potential; and (3) review and approval of wilderness recommendations. Generally, inventoried roadless areas served as the pool for potential wilderness areas.

This analysis evaluates the effects from the prohibitions and permissions on designated wilderness, recommended wilderness, and wilderness characteristics.

WILDERNESS—AFFECTED ENVIRONMENT

The National Wilderness Preservation System was established in 1964 to preserve and protect a portion of the undeveloped Federal lands in their natural condition. Across the United States there are more than 107 million acres designated as wilderness within 702 areas. There are a total of five designated wilderness areas in Idaho comprising 3,962,000 acres (table 3-51). Congress has the sole authority to designate wilderness.

Wilderness character is often used to describe a wilderness area. Wilderness character is defined as untrammelled, natural, undeveloped, and having opportunities for solitude or a primitive and unconfined recreation. (Landres et al. 2005)

As defined in Landres et al. 2005, *untrammelled* means wilderness is essentially unhindered and free from modern human control or manipulation. *Natural* means wilderness ecological systems are substantially free from the effects of modern civilization. *Undeveloped* means wilderness is essentially without permanent improvements or modern human occupation. *Outstanding opportunities for solitude or a primitive and unconfined type of recreation* means wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge. These attributes

are used to measure the potential consequences of the prohibitions and permissions of each alternative on the wilderness resource⁵¹.

Table 3-51. Existing wilderness areas in Idaho

Wilderness area	Acres	Description
Frank Church-River of No Return	2,366,000	Largest wilderness in the lower 48 States; consists of canyons and uplands surrounding the Middle Fork and Main Salmon Rivers in Central Idaho
Gospel Hump	206,000	Glaciated mountain complex around Buffalo Hump south of Grangeville Idaho
Hells Canyon	84,000	Portions of the deepest canyon in North America. located within the Hells Canyon National Recreation Area
Sawtooth	217,000	Steep, majestic mountain tops in the Sawtooth Range, located within the Sawtooth National Recreation Area
Selway-Bitterroot	1,089,000	Rugged headwaters of the Lochsa and Selway rivers along the Idaho- Montana border
Total	3,962,000	

The Selway-Bitterroot Wilderness was the first wilderness area designated in Idaho. It was included in the Wilderness Act in 1964. Portions of the Selway-Bitterroot Wilderness are located in Montana, as well as Idaho. This wilderness area is the third largest wilderness area in the lower 48 States and is managed by the Forest Service.

In the 1970s three new wilderness areas were designated in Idaho: the Sawtooth Wilderness (P.L. 92-400 the Sawtooth Wilderness and Recreation Area); the Hells Canyon Wilderness (P.L. 94-199); and the Gospel-Hump Wilderness (P.L. 95-237 Endangered American Wilderness Act).

In 1980, Congress designated the Frank Church-River of No Return Wilderness (P.L. 96-312 Central Idaho Wilderness Act). The Frank Church-River of No Return Wilderness is bordered by Selway Bitterroot Wilderness on the north and the Gospel-Hump Wilderness to the northwest and is the second largest wilderness area in the lower 48 States.

In 2005, Representative Simpson introduced new legislation that would designate portions of the Boulder-White Clouds Roadless Area as wilderness (H.R. 222, Central Idaho Economic Development and Recreation Act (CIEDRA, 2007). Should legislation not be acted upon in the 110th Congress, it is anticipated similar language will be introduced in the 111th Congress.

⁵¹ The Wilderness Act does not constrain projects proposed adjacent to wilderness boundaries because of the mere presence of wilderness. The effects from projects adjacent to wilderness areas should not be the sole reason for deferring or declining a project proposal.

WILDERNESS—ENVIRONMENTAL CONSEQUENCES

All Alternatives

Effects on designated wilderness areas depend on the prohibitions and permissions for timber cutting, road construction/reconstruction, and discretionary mineral materials that could affect one of the wilderness attributes: untrammeled, natural, undeveloped, and opportunities for solitude or primitive and unconfined recreation. None of the alternatives would directly affect existing wilderness because the management direction would not apply to designated wilderness areas; therefore, there would be no effects on the untrammeled, natural, undeveloped, or unconfined recreation opportunities within a wilderness area. However, activities permitted in Idaho Roadless Areas contiguous or adjacent to designated wilderness could affect opportunities for solitude and the scenery from a wilderness area. The degree of effect would depend on the frequency, duration, extent, and type of activity that occurs.

For all alternatives, roads constructed along or near a wilderness boundary could have an effect on the feeling of solitude because of the sounds made during construction and the potentially during the use of the road. Timber cutting could affect the natural appearance of an adjacent area.

All alternatives permit road construction/reconstruction to access valid existing rights, such as hard rock mining and mineral leases. About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres associated with the Smoky Canyon Mine expansion are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon Mine expansion would affect the Sage Creek and Meade Peak Roadless Areas. None of these roadless areas are near or adjacent to wilderness; therefore, there would be no effect on wilderness areas from phosphate mining.

2001 Roadless Rule (No Action)

Under the 2001 Roadless Rule, the prohibitions and exemptions on road construction and timber cutting apply uniformly to all Idaho Roadless Areas. Where road construction or timber cutting is permitted under an exception near or adjacent to existing wilderness, there may be effects on wilderness depending on the viewshed, distance from wilderness boundary, and natural drainage.

About 1.7 million acres (20 percent) of Idaho Roadless Area lands lie adjacent to existing wilderness (table 3-52). Based on foreseeable projections, about 15 miles of road construction/reconstruction and 1,500 acres of timber harvest are anticipated to occur over the next 15 years. If these activities are located within the 1.7 million acres adjacent to wilderness, there may be short term effects (during the duration of the activity) on the feeling of solitude, especially near the edge of a wilderness boundary. However, it is

likely very few projects would occur adjacent to wilderness because most projects, especially timber cutting, are more likely to occur closer to mills, closer to communities (to reduce uncharacteristic wildland fire effects), and in areas with better accessibility.

The 2001 Roadless Rule does not permit road construction/reconstruction for new mineral leases so it is unlikely that oil and gas, geothermal resources, or additional known phosphate deposits would be developed (see the Minerals section); therefore, there would be no associated effects.

Table 3-52. Acres of management theme adjacent to existing wilderness

Theme equivalent	Wild Land Recreation	Primitive	Backcountry	GFRG	Forest plan special areas	SAHTS
2001 Roadless Rule			1,726,000			
Existing Plans	140,000	515,000	842,000	158,000	71,000	0
Idaho Roadless Rule	139,000	553,000	954,000	9,000	71,000	0

Existing Plans

Existing Plans prohibit road construction/reconstruction and to a large degree timber cutting in areas recommended as wilderness and in Primitive areas (about 3.45 million acres). Only very limited effects on solitude in designated wilderness areas are likely because very limited timber cutting would be permissible.

Generally road construction/reconstruction, timber cutting, and to some degree discretionary mineral activities is permissible in management prescriptions similar to the Backcountry and GFRG themes. About 842,000 acres of management prescriptions similar to the Backcountry theme (about 4 percent of total Backcountry) are adjacent to existing wilderness and 158,000 acres of GFRG (about 12 percent of total GFRG) (table 3-52). Based on foreseeable projections, about 180 miles of road are anticipated to be constructed or reconstructed over the next 15 years, and 42,000 acres of timber harvested. These activities are likely to be located in the Backcountry and GFRG themes; however, only a limited amount of these themes are adjacent to existing wilderness. Some of these activities could affect solitude within a wilderness area by the initial construction or harvesting activities or the long-term use of the roads, especially in those areas near a wilderness boundary.

Existing Plans may allow road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half the Idaho Roadless Areas have high to moderate potential, it is likely some development would eventually occur.

Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. The Peace Rock Roadless Area is not adjacent to a designated wilderness area; therefore, there would be no affect from this development. The 32,700-acre West

Panther Roadless Area is adjacent to the Selway-Bitterroot Wilderness. Only 33 acres of the West Panther Roadless Area are being considered for exploration and development and it is unlikely (given the size of the roadless area) that geothermal development would affect the solitude of the Selway-Bitterroot Wilderness.

If other roadless areas should be explored and developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources), which would could affect the solitude within a designated wilderness area. Project-specific analysis would be completed prior to approval.

Oil and gas are found only on the Caribou-Targhee National Forest, and no designated wilderness areas are located on this forest. There would be no effect from road construction/reconstruction to access oil and gas resources.

The Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule prohibits road construction/reconstruction and to a large degree timber cutting in the Wild Land Recreation, Primitive, and SAHTS, about 3.1 million acres. Within these themes there would be minimal to no indirect effect on designated wilderness, because of the limited activity.

In Backcountry, road construction/reconstruction, timber cutting, and discretionary mineral activities are permissible to a limited degree; about 954,000 acres of Backcountry (about 18 percent of all Backcountry) are located adjacent to existing Wilderness. In GFRG these activities are not prohibited; about 9,000 acres (1 percent of all GFRG), in two roadless areas (Meadow Creek and Ten Mile/Black Warrior on the Boise National Forest), are located adjacent to designated wilderness.

Based on foreseeable projections, about 60 miles of road are anticipated to be constructed or reconstructed over the next 15 years, and timber cutting could occur on 12,000 acres. These activities are likely to be located in the Backcountry and GFRG themes; however, only a limited amount of these themes are adjacent to existing wilderness. Depending on the location of the project, some of these activities could affect the solitude within wilderness areas area by the initial construction or harvesting activities or the long-term use of the roads.

The Idaho Roadless Rule permits road construction/reconstruction for new mineral leases in GFRG. Known unleased phosphate deposits and oil and gas resources are found in Idaho only on the Caribou-Targhee National Forest. None of the resources are located adjacent to designated wilderness areas; therefore, there would be no effect from road construction/reconstruction to access oil and gas or unleased phosphate deposits.

Most of the GFRG lands have high to moderate potential for geothermal resources. However, only two roadless areas (Meadow Creek and Ten Mile/Black Warrior on the Boise National Forest) have GFRG that is located adjacent to designated wilderness

areas. If the geothermal resource were explored and developed in these roadless areas, then it could potentially affect the solitude found in Sawtooth and Frank Church-River of No Return Wilderness Areas. The degree of effect would depend on the location and level of development; however, there are no current development proposals for these areas.

Currently lease applications have been submitted for geothermal exploration including 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. These roadless areas are located in Backcountry; therefore, no road construction/reconstruction could occur to provide road access to this resource. In addition, the Peace Rock Roadless Area is not adjacent to a designated wilderness area. The 32,500-acre West Panther Roadless Area is adjacent to the Selway-Bitterroot Wilderness; however, only 33 acres are being considered in the lease application.

RECOMMENDED WILDERNESS—AFFECTED ENVIRONMENT

Recommended wilderness areas are lands identified as having undeveloped character and wilderness potential through forest planning. During forest planning the current undeveloped lands within a forest are assessed using the three-step process discussed in the introduction to this section to determine if they should be recommended to Congress for the inclusion in the National Wilderness Preservation System.

Currently, there are 28 areas (1,320,900 acres) identified in existing plans as recommended for wilderness designation within Idaho. These areas are shown in table 3- 53. Other Idaho Roadless Areas were not recommended for wilderness because they fall short of the Agency's recommended wilderness evaluation criteria, (FSH 1909.12, Chapter 70). Effects on roadless characteristics in light of the prohibitions and permissions on these other Idaho Roadless Areas are evaluated in the other sections of the EIS.

Recommended wilderness areas are managed to maintain wilderness character and values until such time as Congress acts upon the Agency recommendation or a different Agency recommendation is made. Roadless areas that are recommended for wilderness have management prescriptions that protect the wilderness character of the area, but these areas are not managed as wilderness.

There is only one wilderness study area in Idaho, Grandmother Mountain on the Idaho Panhandle National Forest. Portions of this wilderness study area were recently acquired through a land exchange.

RECOMMENDED WILDERNESS—ENVIRONMENTAL CONSEQUENCES

This section evaluates the potential effects on recommended wilderness from the prohibitions and permissions in the alternatives.

2001 Roadless Rule (No Action)

Under the exceptions permitted by the 2001 Roadless Rule, road construction/reconstruction and timber cutting could occur in areas recommended for wilderness through the forest planning process; however, this is unlikely to happen as existing plans bar these activities in recommended wilderness. The 2001 Roadless Rule would not affect recommended wilderness areas.

Existing Plans

Under the Existing Plans about 1,320,800 acres are recommended for wilderness (table 3- 53). Areas recommended for wilderness would be managed to protect and preserve existing wilderness character. Hence, they generally do not allow road construction/reconstruction, timber cutting, or discretionary mineral activities (appendix B). A very limited amount of timber cutting is permissible in some recommended wilderness areas, incidental to other uses such as trail construction.

Idaho Roadless Rule (Proposed Action)

The State of Idaho applied the Wild Land Recreation theme to most areas recommended for wilderness in Existing Plans; however, for the Idaho Panhandle and Clearwater National Forests the State incorporated recommendations from the proposed revised plans (table 3-53). This change on the Idaho Panhandle and Clearwater National Forests reflects the collaborative process being used during revision. The portion of the Grandmother Mountain roadless area, that is designated a wilderness study area, would be managed as Wild Land Recreation under the Idaho Roadless Rule.

The Idaho Roadless Rule would designate 1,378,600 acres as Wild Land Recreation. Road construction/reconstruction and timber cutting would be prohibited. Timber cutting for administrative use (trail construction) or personal use (firewood) would be permissible. In addition, the Idaho Roadless Rule would prohibit the sale of saleable mineral materials, as well as surface occupancy for new mineral leases. These prohibitions add additional protections until Congress has an opportunity to address wilderness. The Idaho Roadless Rule provides additional protections to 57,800 acres over the Existing Plans.

As noted in table 3-53, the Idaho Roadless Rule does not apply the Wild Land Recreation theme to all lands recommended for wilderness in Existing Plans. The wilderness recommendations made during forest planning would not change; however, these lands would be managed pursuant to the Idaho Roadless Rule. The following discusses the implications of those differences.

Portions of the Boulder-White Clouds roadless area (those portions not included in the proposed Wilderness legislation), and all of the Winegar Hole roadless area would be managed under the Primitive theme. Limited timber cutting could occur from existing roads or using aerial systems in these two roadless areas. Timber cutting, if it were to occur in these areas, could change the wilderness character to a limited degree. Timber

cutting would likely occur on the edges of these roadless areas because of the lack of road access. The interior of roadless areas would retain their inherent character; however along the edges timber cutting could affect the feeling of untrammled and being natural. Over time as the vegetation regrows this effect would lessen.

The 6,900 acres in the Mallard Larkins roadless area are in the Backcountry theme. Timber cutting and road construction/reconstruction are permissible in this area. These activities could affect the wilderness character on these lands, especially if road construction/reconstruction occurs.

Table 3-53. Areas¹ recommended for wilderness in Existing Plans; acres of Wild Land Recreation in the Idaho Roadless Rule; discussion of the difference

Forest	Area name	Existing Plans recommended wilderness (acres)	Idaho Roadless Rule Wild Land Recreation (acres)	Discussion
Boise Region 4	Sawtooth Additions (Hanson Lake)	13,600	13,600	No difference
	Payette Crest (Needles)	3,300	3,300	No difference
	Red Mountain	85,900	85,900	No difference
	Sawtooth Additions (Ten Mile/Black Warrior)	76,500	76,500	No difference
	Total	179,300	179,300	
Caribou ² Region 4	Caribou City	28,900	28,900	No difference
	Mount Naomi	13,200	13,200	No difference
	Total	42,100	42,100	
Challis Region 4	Borah Peak	108,500	109,200	700-acre addition around fringe areas
	Boulder-White Clouds	35,200	115,800	80,700 acres of the Boulder-White Clouds roadless area are included in H.R. 222; this recommendation was incorporated
	Pioneer Mountains	49,600	49,600	No difference
	Total	193,300	274,600	
Clearwater Region 1	Hoodoo	111,300	152,300	Added 39,400 acres of the Great Burn, except changed area adjacent to Fish Lake Trail to Backcountry based on county recommendation
	Mallard Larkins	65,800	59,400	6,400 acres placed in the Backcountry theme based on Commissioners recommendation
	North Fork Spruce-White Sand	9,500	9,500	No difference
	Sneakfoot Meadows	9,600	9,600	No difference
	Total	196,200	230,800	

Forest	Area name	Existing Plans recommended wilderness (acres)	Idaho Roadless Rule Wild Land Recreation (acres)	Discussion
Idaho Panhandle Region 1	Grandmother Mountain	0	6,800	6,800 acres; acquired land and part of a wilderness study area
	Mallard Larkins	76,100	49,500	22,100 acres placed into SAHTS; public input during revision
	Salmo Priest	13,500	14,300	800 acres added based on proposed plan
	Scotchman Peaks	9,400	10,800	1,400 acres added based on proposed plan
	Selkirk	25,400	31,300	Realignment and 5,900 acres added based on proposed plan
	Total	124,400	112,700	
Payette Region 4	Secesh	110,300	110,300	No difference
	Payette Crest (Needles)	90,200	90,200	No difference
	Total	200,500	200,500	
Sawtooth Region 4	Boulder-White Clouds	158,900	115,500	47,900 acres of the Boulder-White Clouds roadless area was not included in H.R.3603; therefore, these lands were placed in the Primitive theme
	Pioneer Mountains	58,400	58,400	No difference
	Sawtooth Additions (Hanson Lakes roadless area)	15,100	15,100	No difference
	Total	232,400	189,000	
Targhee ³ Region 4	Italian Peaks	48,700	48,700	No difference
	Lionhead	11,200	11,200	No difference
	Winegar (Weinegger) Hole	2,700	0	Placed in the Primitive theme due to Country recommendation
	Diamond Peak	29,500	29,500	No difference
	Palisades	60,200	60,200	No difference
	Total	152,300	149,600	
Statewide	Grand Total ¹	1,320,900	1,378,600	

¹ Forest plan special areas such as wild and scenic rivers and research natural areas are not included in the totals.

² Caribou portion of the Caribou-Targhee National Forest.

³ Targhee portion of the Caribou-Targhee National Forest.

WILDERNESS CHARACTERISTICS—AFFECTED ENVIRONMENT

Idaho Roadless Areas are the “reservoir” of undeveloped lands from which future wilderness designations are considered. Each roadless area is evaluated during the forest planning process to determine if it provides wilderness characteristics and whether or not it should be recommended for wilderness. Areas not recommended for wilderness could still be considered for wilderness by Congress. Impacts on the area’s inherent wilderness character, its undeveloped nature, its naturalness, the opportunity to provide primitive and unconfined recreation, and its natural ecosystem forces would detract from future consideration of the area as wilderness.

WILDERNESS CHARACTERISTICS—ENVIRONMENTAL CONSEQUENCES

2001 Roadless Rule (No Action)

The 2001 Roadless Rule limits the suite of road construction/reconstruction and timber cutting allowed across all Idaho Roadless Areas. About 1,500 acres of timber cutting and 15 miles of road construction are projected to occur over the next 15 years. These limitations would enable the vast majority of roadless areas to retain their existing character long into the future.

Existing Forest Plans

Some forest plan management prescriptions provide better protection for preserving the wilderness character (such as recommended wilderness and Primitive); others permit activities that could change the existing character (such as prescriptions similar to Backcountry and GFRG). About 180 miles of road construction/reconstruction are projected to occur over the next 15 years, and timber cutting is projected to occur on 42,000 acres over the next 15 years. Any areas developed could adversely affect their wilderness potential. In the foreseeable future it is difficult to determine which roadless areas would be affected, because the locations of future activities are unknown, with the exception of phosphate leasing. Any mineral development would change the existing character of the lands affected.

Idaho Roadless Rule (Proposed Action)

Lands in the Wild Land Recreation theme would retain their existing character. Lands in the Primitive and SAHTS themes are likely to retain most of their inherent character, except when timber cutting occurs. Timber cutting may be done only from existing roads or through aerial systems; because of this limitation timber cutting is likely to only occur on the edge of a roadless area. The existing character may be modified on the edges of a roadless area, with the interior kept intact. Timber cutting in these themes is projected to be rare and done only to reduce hazardous fuels.

Lands in the Backcountry theme often would retain their existing character, because timber cutting and road construction are anticipated to be infrequent. Where these activities occur their inherent characteristics would change. If roads are constructed it

may take longer for the area to return to a “natural” state than if timber cutting alone were to take place.

Lands in the GFRG theme often display relatively more evidence of human use, including roads, facilities, evidence of vegetative manipulation, and mineral exploration/extraction. Depending on the degree of previous activity, additional activities may or may not change the existing character. Where disturbance has occurred in the past, the change would not be as great as in areas with little past disturbance. Areas without past disturbance would likely lose their inherent wilderness character, especially if roads are constructed or mineral resources are developed.

About 60 miles of road construction/reconstruction are projected to occur over the next 15 years, and timber cutting is projected to occur on 12,000 acres over the next 15 years. Any areas developed could adversely affect their wilderness potential. In the foreseeable future it is difficult to determine which roadless areas would be affected, because the locations of future activities are unknown, with the exception of phosphate leasing.

CUMULATIVE EFFECTS

Idaho Roadless Areas are managed under a variety of management prescriptions in Existing Plans. Implementation of the 2001 Roadless Rule or the Idaho Roadless Rule would help establish a uniform approach to managing these areas. Because many Idaho Roadless Areas are adjacent to wilderness areas, large tracts of land would remain essentially unroaded and undeveloped. In the past, roadless areas were managed as a bank for future resource development or special designation. If these areas were managed for their own inherent values, there could be less pressure to designate these lands as wilderness or other special designation to shield the land from development. The Idaho Roadless Rule may reduce controversy and result in more stability by recognizing those lands with important wilderness character and those individual portions of roadless areas where some development could occur.

Other programmatic actions listed in appendix N would not affect the amount or availability of roadless areas, with the potential exception of the Roads Policy. The Roads Policy directs the Agency to determine which roads are needed and which roads are unneeded. As described in the Road Construction/Reconstruction section, more than 30 miles of road have been decommissioned over the past 6 years for every mile of new road constructed. Indirectly, decommissioning roads could result in expanding a roadless area boundary.

3.13 Cultural Resources

INTRODUCTION

Cultural resources include areas, sites, buildings, art, architecture, memorials, and objects that have scientific, historical, or cultural value. These resources link people to their cultural history, provide insight into how people lived in the past, and reveal past and ongoing relationships between people and the natural world.

Heritage tourism is one of the fastest growing sectors of the tourism industry, and it is ranked among the top two or three reasons that people take vacations (USDA Forest Service 1999). In 1994 and 1995, an estimated 123.3 million people visited an historic or prehistoric site in the United States (Cordell et al. 1999). It is estimated that up to 90 percent of the Nation's prehistoric sites were destroyed by development by the 1960s (USDA Forest Service 1999). National Forest System (NFS) lands contain many of the best preserved sites that remain in the United States, in some of the least disturbed natural settings. These sites provide opportunities for Americans to learn about their cultural heritage (USDA Forest Service 1999).

Idaho Roadless Areas are likely to contain a significant proportion of the least damaged cultural resources that occur on NFS lands because of the lack of human-caused disturbance. Given the widespread destruction of cultural resources located on private lands to date and the rapidly growing interest in heritage tourism nationwide, cultural sites on NFS lands can be expected to become increasingly valuable resources that more people wish to visit in the future.

Under Executive Order 11593, Protection and Enhancement of the Cultural Environment, and Section 110 of the National Historic Preservation Act (NHPA), Federal agencies are charged with the task of inventorying the historic and prehistoric sites located on the lands they manage. In addition, the NHPA and NEPA require that Federal agencies take into account the effects of any development or management actions on historic and cultural properties and seek ways to avoid, minimize, and mitigate any adverse effects.

To comply with these laws, agencies conduct cultural resource inventory in areas where projects are proposed. If a site is identified, it is evaluated to determine whether it is significant⁵² and eligible for listing in the National Register of Historic Places. If a site is significant and the site would be affected by actions proposed in the preferred alternative, the preferred alternative may not proceed until steps are taken to minimize impacts and mitigate adverse effects.

⁵² Significant cultural resources are defined in 36 CFR 60. Historic properties are considered significant if they qualify for inclusion in the National Register of Historic Places.

Mitigation measures, or alternative plans, may also be required if proposed projects or development activities are undertaken in areas having cultural sites that are considered significant to local Native American Tribes and other ethnic groups.

The Archaeological Resources Protection Act of 1979 protects archaeological resources and sites on public and Native American lands to prevent their loss and destruction. The act requires criminal prosecution or civil remedies for the unauthorized disturbance of archaeological resources. It also establishes a permit process for archeological investigations on Federal lands. The permitting process requires consultation with affected tribal governments when a permitted activity would affect resources of interest to the Tribes.

The Native American Graves Protection and Repatriation Act of 1990 requires timely consultation with culturally affiliated Tribes when human remains are inadvertently discovered in the course of implementing projects on Federal lands.

Executive Order 13007 states that agencies must consider sacred sites on Federal lands in determining how areas that contain them should be used and managed. The Forest Service consults with at least 11 Native American Tribes in the course of managing the resources on NFS lands in Idaho. The analysis evaluates the potential risk to cultural resources found in Idaho Roadless Areas.

AFFECTED ENVIRONMENT

Approximately 2.2 million acres (about 10 percent of NFS lands) in Idaho have been inventoried and more than 14,500 cultural resources have been identified. Since most inventories are project driven, the percentage of inventory is lower in roadless areas. It is estimated that NFS lands in Idaho may contain more than 200,000 cultural sites.

The average site density on NFS lands in Idaho is about one site in every 150 acres⁵³. This site density is an estimate based primarily on inventory work done in advance of timber sales, mining operations, and rangeland management actions. Therefore, it is not a statistically valid estimate that can be reliably applied to Idaho Roadless Areas. It is however, a reasonable estimate that can be applied to compare the alternatives' potential effects.

Of the more than 14,500 cultural resources identified on NFS lands in Idaho, more than 3,700 (approximately 25 percent) are considered significant and eligible for inclusion on the National Register of Historic Places. Most of the other 10,800 sites have not yet been evaluated for significance. Of the cultural sites that have been recorded on NFS lands, fewer than 1 percent have been stabilized or restored, most have not been studied or evaluated, and only 66 have been listed on the National Register of Historic Places.

Most cultural resource inventories have been conducted on lands where development or management projects have been proposed because of the legal requirement to

⁵³ Based on all previous inventory information as reported to Congress.

disclose the impacts of such projects on cultural resources. Many undocumented cultural resources exist in roadless areas, where development has been relatively minimal. If the estimated site density for all forest lands were applied to the roadless areas, then about 62,000 sites would be expected. Of these, an estimated 15,500 would be significant cultural resources eligible for listing on the National Register of Historic Places.

ENVIRONMENTAL CONSEQUENCES

Building roads and implementing management actions such as timber harvest may, at times, adversely affect cultural resources. In the past, roads were often built in culturally sensitive locations along rivers and creeks, or through open areas. Although best management practices now discourage road development in riparian areas and floodplains, some buried or surface remains of archaeological sites may inadvertently be damaged by various ground-disturbing activities. Whenever roads are constructed there may be a variety of associated impacts to consider – roads and the disturbance associated with construction, construction camps, borrow pits, and staging areas may cause adverse effects on the integrity of historic or cultural sites. Enhanced road access may increase secondary impacts associated with visitor use for recreation activities.

Surveys conducted in advance of road construction and reconstruction, timber harvest, or other activities, may result in the identification of unknown and unrecorded cultural resources. Such discoveries might eventually lead to the protection, restoration, and potential development of some sites for interpretive and educational purposes.

All Alternatives

All alternatives require compliance with existing laws and regulations; therefore, before any management actions could take place a cultural resource inventory would be conducted and appropriate mitigation applied.

About 9,100 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. Some of these acres have been mined to date (the total amount is unknown). About 1,100 acres associated with the Smoky Canyon Mine expansion are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon Mine expansion would affect the Sage Creek and Meade Peak Roadless Areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 8,000 acres within the seven roadless areas, would likely be permitted and developed sometime in the extended future (50 or more years). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas. Prior to mining, cultural resource surveys would

be conducted; if cultural resources are found, the appropriate mitigation would be applied.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction/reconstruction (including road access to new mineral leasing areas) across all 9.3 million acres, except in seven situations. About 15 miles of road construction/reconstruction are projected over the next 15 years. This limited amount of road construction/reconstruction would limit the risk to retaining the current integrity and character of cultural resources. There would be low potential for disturbance, vandalism, and looting.

Existing Plans

Under Existing Plans no road construction/reconstruction is generally permitted in areas with management prescriptions similar to the Wild Land Recreation or Primitive themes (about 3.45 million acres). On these lands there would be little risk to cultural resources because there would be no disturbance. Road construction/reconstruction is allowed on about 1,262,400 acres in areas with management prescriptions similar to GFRG theme, and is also allowed to a limited degree on 4,244,500 acres in areas with management prescriptions similar to Backcountry. About 180 miles of road are projected to be constructed/reconstructed over the next 15 years across all Idaho Roadless Areas. This level of activity would have a low to moderate risk to cultural resources depending on where they occur. Generally, newly constructed roads are not open to public travel; therefore, there would still be a low risk of vandalism and looting.

The Caribou Forest Plan permits leasing of the estimated 6,500 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,900 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest within the Bald Mountain, Bear Creek, and Poker Creek Roadless Areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased. There is a potential risk to cultural resources on these 13,400 acres on the Caribou-Targhee National Forest when and if this development occurs. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Existing Plans would permit road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half of Idaho Roadless Areas have high to moderate potential it is likely that some development would eventually occur. Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of

the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would be completed, including consideration of cultural resources, prior to approval of any exploration or development of geothermal resources.

It should be noted that activities can result in positive outcomes. Generally surveys are not conducted unless there is a project action, so projects provide the opportunity to document the resources in the designated areas. Finding cultural resources can also provide more opportunity to provide tourism, educational, and interpretive opportunities to the public regarding their heritage on NFS lands.

Idaho Roadless Rule (Proposed Action)

Road construction/reconstruction would be prohibited in Wild Land Recreation, Primitive, or SAHTS themes (about 3.1 million acres). On these lands there would be little risk to cultural resources because there would be no disturbance. Road construction/reconstruction would be permitted on 609,500 acres of GFRG, and to a limited degree on 5,246,100 acres within the Backcountry theme. About 60 miles of road are projected to be constructed/reconstructed over the next 15 years. This level of activity would have a low risk to cultural resources, and surveys would be conducted during the analysis for these site-specific actions.

The Idaho Roadless Rule provides special management direction for about 68,600 acres of areas of historical and tribal significance. Three areas have been identified: Pilot Knob on the Nez Perce National Forest, Nimiipuu and Lewis and Clark National Historic Trails on the Clearwater National Forest, and the Mallard Larkins Pioneer Area on the Idaho Panhandle National Forest. The following descriptions are derived from *Lewis and Clark on the Lolo Trail* (USDA Forest Service, 2004f):

Pilot Knob is located in the Silver Creek-Pilot Knob roadless area. A key visual attraction in this area is Pilot Rock, a massive, bare rock formation almost in the center of the area. Pilot Rock is reported to be an ancient “vision quest” site for the Nez Perce Indian Tribe.

The Nimiipuu (or Nee-Me-Poo) and Lewis and Clark trails are part of the Lolo Trail, which is a registered National Historic Landmark and National Historic Trail. This trail was a major travel route between the Columbia Basin and the Montana country prehistorically. Lewis and Clark traveled over sections of the trail in their journeys of 1805–06. The area has the unique distinction of possessing the longest remaining undisturbed section of the Lewis and Clark Trail in the country.

For the Nimiipuu (the Nez Perce), the Lolo Trail was the “Road to Buffalo Country,” a route families traveled each summer to hunt buffalo and trade with Plains tribes to the east. For the Salish, it was the “Trail to the Nimiipuu,” a route to salmon fishing and trading with Plateau and Coastal tribes. The Nimiipuu hunted and gathered

food across their Plateau homeland, from the Bitterroots to the Blue Mountains in present-day Oregon.

In the early 1700s horses spread north from Spanish colonies in New Mexico, eventually reaching the Nimiipuu homeland, becoming part of the Nimiipuu way of life and providing a means to travel the Lolo Trail and beyond faster and farther than ever before. Nearly 2 centuries later, in 1877, five bands of Nimiipuu followed the Lolo Trail in their attempt to elude General O. O. Howard and the U.S. Army attempting to move them onto a reservation. The journey across the 1,170-mile route lasted nearly 4 months. It began near Wallowa, Oregon (the homeland of Chief Joseph's band), and ended at the Bear Paw Mountains near Chinook, Montana. The route was designated the Nez Perce (Nee-Me-Poo) National Historic Trail in 1986 (taken from Lewis and Clark on the Lolo Trail, USDA Forest Service)

The Mallard Larkins Pioneer Area encompasses the Mallard Larkins and Black Mountain-Nub Peak group of lakes and peaks, which was set aside for its outstanding scenic, roadless, and primitive recreational qualities.

Management direction under the proposed Idaho Roadless Rule would increase the potential for retaining the current integrity and character of cultural resources; limit the potential for conflict between interest groups over the use and management of these special cultural areas; and limit the risk of destruction of resources by prohibiting road construction/ reconstruction and surface occupancy for leasable minerals. Some limited timber cutting could occur if done off existing roads or via helicopter but is unlikely to modify the current integrity because helicopter logging systems would be used.

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Cultural resources would be considered during site-specific analysis and mitigations applied.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No cultural resources would be affected in these areas.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits.

These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to cultural resources on these 12,100 acres when and if this development occurs. Site-specific analysis would occur prior to any future leasing and mitigations applied.

About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section), and there would be no effect on cultural resources found in this area.

CUMULATIVE EFFECTS

NFS lands contain a substantial share of the Nation's cultural resources and a significant portion of the least damaged cultural resources occur in roadless areas. Given the widespread destruction of cultural resources located on private land to date, and the rapidly growing interest in heritage tourism, cultural sites on NFS lands can be expected to become increasingly unique and valuable resources that more people wish to visit in the future. These trends will pose a dilemma for their management with regard to providing a balance of protection and visitation opportunities. The cumulative effects of these trends and of the alternatives would be an emphasis on cultural resource and site conservation in Idaho Roadless Areas due to reduced disturbance and visitation; and a focus on inventory, restoration, interpretation, and tourism opportunities on lands that are developed and that would allow future road construction.

Other programmatic policy and management decisions do not directly affect cultural resources, because none of them prescribe site-specific actions. The NFP, HFI, HFRA and Energy Policy all that encourage actions be implemented to meet their objectives. This analysis considered what activities (timber cutting and mineral development) would be projected to occur to meet these policies in the foreseeable future. Therefore, the analysis considered the potential cumulative effect of these policies on cultural resources.

3.14 Idaho and Affected Indian Tribes

INTRODUCTION

There are numerous Native American Tribes with interests in Idaho along with five reservations and other forms of tribal lands that are not reservations within the State. The reservations share common boundaries with NFS lands. The larger Tribes include the Kootenai Tribe of Idaho, Nez Perce Tribe, Coeur d'Alene Tribe, Shoshone-Paiute Tribes, and the Shoshone-Bannock Tribes. Each Tribe maintains interests and reserved rights through treaties with the United States within the State of Idaho. Other Tribes residing in other States also maintain tribal interests, including aboriginal, ceded, and treaty territories within the State. Many of their tribal lands and interests are adjacent to or within NFS lands.

AFFECTED ENVIRONMENT

The United States has a unique relationship with Native American Tribes as provided in the Constitution of the United States, treaties, and Federal statutes. These relationships extend to the Federal Government's management of public lands, and the Forest Service strives to ensure that the rights and interest that Native American Tribes may have within Idaho's roadless areas are protected.

On September 23, 2004, President George W. Bush issued Executive Memorandum Government-to-Government Relationship with Tribal Governments, recommitting the Federal Government to work with federally recognized Native American Tribal Governments on a Government-to-Government basis and strongly supporting and respecting tribal sovereignty and self-determination. President Bush also reaffirmed an earlier Executive Order (13175), Consultation and Coordination with Indian Tribal Governments, which requires agencies to consult with tribal officials early in the process of developing [proposed regulations].

Management of roadless areas has been topic of interest and importance to tribal Governments. During the promulgation of the 2001 Roadless Rule, Forest Service line officers in the field were asked to make contact with Tribes to ensure awareness of the initiative and rulemaking process. Outreach to Tribes was conducted at the national forest and grassland level, which is the appropriate Forest Service leadership level for initially conducting government-to-government dialog with Tribal leaders on this Draft EIS. Tribal representatives remained engaged concerning these issues during the subsequent litigation and rulemaking efforts.

The State's Petition identifies that a vital part of its public process in developing its Petition were the recommendations and comments received from Native American Tribes. The Governor's Office was keenly aware of the spiritual and cultural significance some of these areas hold for the Tribes. The State of Idaho solicited input from the Coeur D'Alene, Kootenai, Nez Perce, Shoshone-Bannock, and Shoshone-Paiute

Tribes. The State and the Forest Service have endeavored to reflect those interests and concerns in the proposed Idaho Roadless Rule. Based on that input, the State and the Forest Service developed a special theme to recognize and address certain roadless areas with special areas of historical or tribal significance, including Pilot Knob, the Niimiipuu, and Lewis and Clark National Historic Trails.

The protection, use, and access to sacred sites are analyzed in this EIS. Moreover, protection of traditional cultural places and archaeological and natural resources are also being considered in other sections of the EIS, insofar as they affect tribal interests.

ENVIRONMENTAL CONSEQUENCES

All Alternatives

Impacts on tribal Governments and tribal practices from resource management activities are not expected because of consultation requirements and other agreements with individual Tribes. Historic and prehistoric cultural resource and traditional properties would be protected by law as described in the Cultural section of this document.

2001 Roadless Rule (No Action)

The 2001 Roadless Rule prohibits road construction/reconstruction, and timber cutting in Idaho Roadless Areas with some exceptions. Based on trend information, about 15 miles of road construction/reconstruction and 1,500 acres of timber cutting are projected over the next 15 years. Because of the minimal amount of disturbance allowed and projected, there would likely be less conflict between interest groups and Tribes over the use and management of areas that may contain sacred sites. If privacy were necessary for sacred sites, maintaining roadless characteristics would help maintain the privacy. A roadless condition might improve the habitat of plants that the Tribes use during gathering activities. Without future road access to Idaho Roadless Areas, it would be difficult for some tribal members (such as elders) to access cultural sites, hunting grounds, fishing grounds, and gathering grounds located there.

Existing Plans

Existing Plans prohibit road construction/reconstruction in management prescriptions similar to the Wild Land Recreation and Primitive themes (about 3.5 million acres). In these areas there would be no effect on Tribes over the use and management of areas that may contain sacred sites. About 4,244,500 acres are in management prescriptions similar to the Backcountry theme, and 1,262,400 million acres are in prescriptions similar to GFRG. About 180 miles of road and 42,000 acres of timber cutting are projected to occur over a 15-year period within Idaho Roadless Areas under Existing Plans.

Impacts on tribal Governments and tribal practices from resource management activities would be minimal because of consultation requirements. However, there is

still some risk to sacred sites where American Indians conduct ceremonies that require privacy. If a road were built to or near such a site, the associated increase in visitation could make it impossible to conduct ceremonies there, undermining the important cultural practice. Roads, timber cutting, and mining may also alter the character of places that have historical or cultural value, thereby diminishing their value.

Idaho Roadless Rule (Proposed Action)

The Idaho Roadless Rule prohibits road construction/reconstruction in the Wild Land Recreation, Primitive, and SAHTS themes (about 3.1 million acres). In these areas there would be little conflict between interest groups and Tribes over the use and management of areas that may contain sacred sites. About 5,246,100 acres are in the Backcountry theme and 609,500 acres are in the GFRG theme. Road construction/reconstruction and timber harvest are permissible in GFRG, and permitted in specific situations in Backcountry. About 60 miles of road construction/reconstruction and 12,000 acres of timber cutting are projected to occur over 15 years within Idaho Roadless Areas.

Impacts on tribal Governments and tribal practices from resource management activities would be minimal because of consultation requirements. However, there is still some risk to sacred sites where American Indians conduct ceremonies that require privacy. Roads, timber harvest, and mining may also alter the character of places that have historical or cultural value, thereby diminishing their value.

CUMULATIVE EFFECTS

There would be limited cumulative effects to tribal interests because of consultation requirements. The effects of other programmatic management and policy decisions would also be limited because they do not approve site-specific actions. Management decisions such as PACFISH, INFISH, the Northern Rockies Lynx Management Direction, and the management direction for grizzly bears in the Greater Yellowstone ecosystem all enhance wildlife and fisheries habitat, which would indirectly improve habitat conditions. These decisions in combination with the management direction (permissions and prohibitions) would further improve wildlife and fisheries habitat.

Other policy decisions such as the NFP, HFI, HFRA, and Energy Policy Act were considered in the analysis. The projections for timber cutting and minerals development were based, in part, on implementing the objectives of these policies.

3.15 Social and Economics

INTRODUCTION

People value, enjoy, and use national forests, including Idaho Roadless Areas. The social and economic components of this analysis address what may be regarded as some of the fundamental aspects affecting people's lives in relation to the management and use of national forests and roadless areas. Social and economic components consider the lifestyles, collaborative environment, and beliefs and values of people—which include the local economies, amenity uses, commodity uses, recreation uses, and value preferences.

The social analysis reviewed public comment to the notice of intent and derived three key variables: (1) public values and beliefs about natural resources and roadless areas; (2) the collaborative environment and citizen-government relationships; and (3) lifestyles. Values and beliefs are important components of public evaluations of the proposed Idaho Roadless Rule, and these values and beliefs are also likely to influence the actions of groups and individuals in response to each alternative. The collaborative environment directly influences the willingness and ability of citizens to work with one another and with land management agencies to implement management of roadless areas. Lifestyles express the patterns of activity connecting people to public lands and particularly roadless areas.

To describe the diverse economic activity in Idaho adequately, functional economic areas were delineated. Bureau of Economic Analysis economic areas (EA) were used as the functional economies in Idaho (Johnson and Kort 2004). The economic areas are derived based on factors such as labor flows, purchases of goods and services, and newspaper subscriptions. There are five economic areas that cover Idaho (fig. 3-16 and table 3-54). Teton, Oneida, and Franklin counties in Idaho were part of economic areas in Wyoming and Utah. For this analysis, these counties were removed from the economic areas in those States and placed into the Southeast Idaho economic area (Pocatello / Idaho Falls) for completeness.

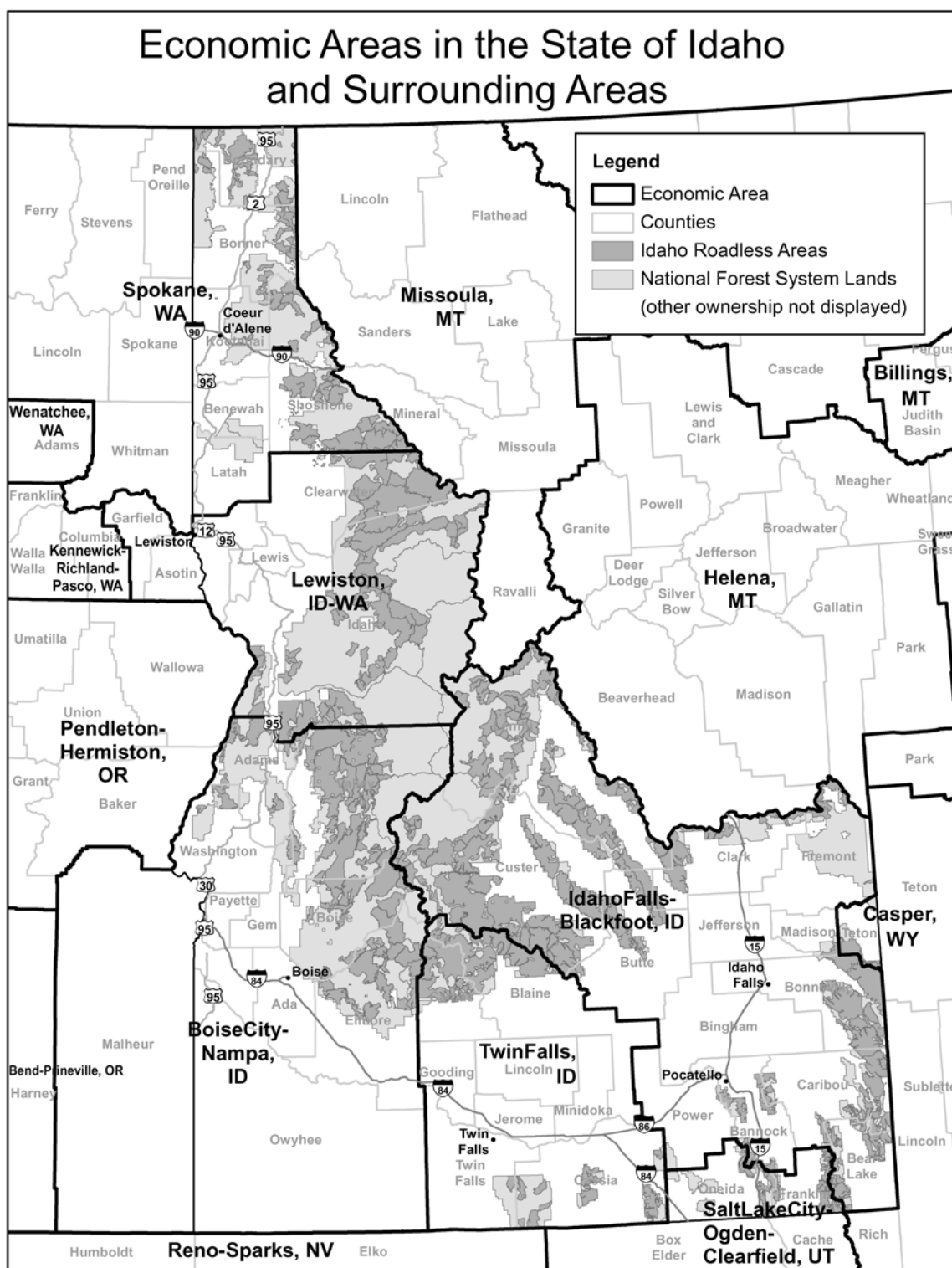


Figure 3-16. Economic areas in the State of Idaho and surrounding areas

Table 3-54. Counties by Bureau of Economic Analysis economic area

North Idaho	Central Idaho	Southeast Idaho	South Central	Boise
Benewah	Asotin, WA	Bannock	Blaine	Ada
Bonner	Clearwater	Bear Lake	Camas	Adams
Boundary	Garfield, WA	Bingham	Cassia	Boise
Ferry, WA	Idaho	Bonneville	Gooding	Canyon
Kootenai	Lewis	Butte	Jerome	Elmore
Latah	Nez Perce	Caribou	Lincoln	Gem
Lincoln, WA		Clark	Minidoka	Malheur, OR
Pend Oreille, WA		Custer	Twin Falls	Owyhee
Shoshone		Franklin		Payette
Spokane, WA		Fremont		Valley
Stevens, WA		Jefferson		Washington
Whitman, WA		Lemhi		
		Madison		
		Oneida		
		Power		
		Teton		

SOCIAL CONTEXT—AFFECTED ENVIRONMENT

Values and Beliefs

Since its inception, the Forest Service has managed NFS lands according to the principle of multiple use. This principle allows the agency to manage land for a variety of uses, including amenity, commodity, noncommodity, and recreation. The Multiple-Use Sustained-Yield Act (Public Law 104-333) formalized this management philosophy, stating that the Forest Service is to manage resources to best meet the needs of the American public, with flexibility to provide for “periodic adjustments in use to conform to changing needs and conditions” (Section 4(a) of the Act [16U.S.C. 531]). Recent social assessments and surveys indicate continued support for the principle of multiple use, including outdoor recreation, timber, watershed protection, range health and protection, minerals, wilderness characteristics, and fish and wildlife security. Beliefs and values about the multiple-use principle are noteworthy and influence the interpretation of management and planning activities. For example, some people perceive multiple use as not allowing for all uses in all places, but as allowing for mixes of diverse uses, perhaps in designated areas. Concerns regarding use conflicts have often been expressed. In general, if a particular category of use is damaging resources or disrupting user experiences, then the Forest Service may have to curtail or eliminate that use in certain areas (Russell and Adams-Russell 2004, Lybecker et al. 2005, Parker et al. 2002, Rasker and Alexander 2003).

The implication of values and beliefs provides a necessity for active balancing when implementing the multiple use principle. Designating certain areas for selected types of management requires careful consideration not only of the resources but also of people's beliefs and values, needs and wants, and individual and community connections to forest resources. Since Americans show diverse orientations to these resources, the use, management, and designation of National Forest System lands is often inherently controversial. This controversy is also apparent in special designations managed by the Forest Service, such as wild and scenic rivers, and wilderness.

A central issue in the controversy about Idaho Roadless Areas is debate over the balance of commodity and non-commodity uses. Whereas people once valued national forests primarily as a source of commodities, in recent years values regarding these lands have shifted towards recreation, environmental qualities, aesthetics, and amenities. Another central issue for Idaho Roadless Area management is access, particularly the designation of motorized and nonmotorized areas and how they can be balanced. This topic was strongly raised in comments responding to the notice of intent for this rulemaking. Because of its complexity and site specificity, this topic will be addressed in independent travel management planning at the forest level.

Controversy and conflict over forest management is often founded on the differing values people may hold towards nature and thus its management. There are two commonly described orientations to the ways Americans tend to view nature (Russell and Adams-Russell 2004, pg. 94). The first is the "utilitarian" view: nature exists for humans to use. People with this view tend to consider active management as positive, asserting that it can shape and enhance the natural world. This orientation also tends to view human intervention as essential for the health of natural systems. The second view is the "naturalist" view: nature exists for its aesthetic and existence values. People holding this view tend to consider active management as non-effective manipulation of nature, often resulting in negative effects.

Although these two views are commonly noted in the published literature (e.g., Kempton et al. 1995), social science assessment work in Idaho (Russell and Adams-Russell 2004) and in northwestern Montana (Impact Assessment, Inc. 1995, Russell and Adams-Russell 2003) indicates that a "stewardship" perspective coexists with the utilitarian and naturalist orientations to nature. This stewardship perspective "emphasizes the coexistence of humans with natural resources, the responsibility of humans to maintain natural resources, and a respect for the integrity and health of ecological systems. Coexistence implies human activity can be compatible with the health and integrity of ecological systems" (Russell and Adams-Russell 2004, pg. 94). Stewardship values thus appear to share attributes of both the naturalist and utilitarian perspectives with an emphasis on the capacity of humans to coexist with, and to use, natural resources while also maintaining and promoting ecological health. The stewardship orientation appears to emphasize a set of contingencies about the relationship of humans with nature that evaluate actions in terms of the "balance" of ecosystem health, human intervention, and the future existence of a resource.

Other social variables may also influence how people perceive management direction, including: (1) lifestyles; (2) perceptions about the purpose of NFS lands and resources; and (3) perceptions about the role of governing agencies in managing and designating public resources (USDA Forest Service 2007m).

Research also indicates some specific values that people may hold towards forests, rangelands, and grasslands, and that these values may “play a critical role in identifying ecosystem management goals, setting the context for decision making, and guiding our choices” (Bengston and Xu 1995, pg. 1. Among the values identified for forest lands are those included in table 3-55 (as indicated by Brown and Reed 2000, pg. 243).

Table 3-55. Forest (and rangeland and grassland) values that people may hold

Aesthetic value	Value the forest because of the scenery, sights, sounds, smells, etc.
Biological diversity value	Value the forest because it provides a variety of fish, wildlife, plant life, etc.
Cultural value	Value the forest because it is a place for me to continue and pass down the wisdom and knowledge, traditions, and way of life of my ancestors
Economic value	Value the forest because it provides timber, fisheries, minerals, or tourism opportunities such as outfitting and guiding
Future value	Value the forest because it allows future generations to know and experience the forest as it is now
Historic value	Value the forest because it has places and things of natural and human history that matter to me, others, or the nation
Intrinsic value	Value the forest in and of itself for its existence, no matter what others think about the forest
Learning value	Value the forest because one can learn about the environment through scientific observation or experimentation
Life sustaining value	Value the forest because it helps produce, preserve, clean, and renew air, soil, and water
Recreation value	Value the forest because it provides a place for favorite outdoor recreation activities
Spiritual value	Value the forest because it is a sacred, religious, or spiritually special place or because one can feel reverence and respect for nature there
Subsistence value	Value the forest because it provides necessary food and supplies to sustain my life
Therapeutic value	Value the forest because it makes me feel better, physically and/or mentally

Any individual value or combination of these values in table 3-55 may apply to National Forest System lands in general and Idaho Roadless Areas in particular. Similarly, different interest groups or geographic communities may hold different combinations of these values. The potential for compatibility or conflict among these values characterizes the relationship of interest groups and communities with National Forest System lands and roadless areas.

Collaborative Environment: Citizen-Governmental Relationships

“Local vs. national” voices and their relative “weight” in planning and decision making constitute an ongoing issue in the management of national forests. This issue influences

the relationship of citizens with the Forest Service that can affect compliance, collaboration, and trust of Agency decision making and planning.

The issuance of the 2001 Roadless Rule resulted in a response spectrum from support to criticism and ultimately several lawsuits and injunctions. One of the primary criticisms of the 2001 Roadless Rule is the perception that it had little recognition of local issues and needs. Concerns were raised about how the national prohibitions would affect local involvement in decision-making. Public comments on the notice of intent and those received during the public comment period for the draft EIS show that some people believe that by prescribing national prohibitions on activities, the action alternatives would reduce local involvement. This fear would then undermine the collaborative land management planning process and the existing trust between Agency officials and local citizens. People commented that this contributed to the feeling that regardless of their input, decisions would ultimately be made by officials in Washington, D.C. – further undermining trust. People also commented that local involvement and decision-making is necessary for developing successful management approaches that are sensitive to the unique social and ecological conditions of individual forests, noting that a national policy lacks this sensitivity. Many commented that local managers are in the appropriate position to solve local management concerns. Some people commented that they oppose this rule and its national prohibitions not because of the nature of the prohibitions themselves, but because they prefer all issues to be addressed and resolved locally.

In contrast, others commented that it is appropriate for the Forest Service to make decisions regarding roadless area protection at the national level because these issues have not been resolved in an expedient fashion at the local level, and because they believe that local officials are subject to the influence of local interest groups to the neglect of other interest groups and/or the majority of American opinion. Some commented that national forests are indeed “national” and thus should be considered at broader levels than just the local level.

The State of Idaho announced in June 2005 that it would submit a petition requesting specific regulatory protections and certain management flexibility for the 9.3 million acres of Idaho Roadless Areas. To ensure there was opportunity for local involvement, the State invited affected county commissioners to develop specific recommendations for the Idaho Roadless Areas in their respective counties. Many counties sponsored public meetings; more than 50 public meetings were held. In addition, the general public was encouraged to send comments directly to the Governor’s Office for consideration. Criticism about the inclusiveness or representativeness of such meetings is not uncommon in public responses assessing the credibility of these activities. Some comments regarding the notice of intent and in response to the county meetings indicate these types of criticisms, highlighting the potential for impacts on the relationship of communities with the Forest Service.

Lifestyle

Lifestyle can be defined by the activities and patterns of behavior based on beliefs and values within a particular context. Lifestyle is expressed in customs, styles, or patterns of working, recreating, socializing, and other activities. Here, the lifestyle discussion indicates patterns of activity that can be affected by forest management and roadless area management decisions (Russell and Adams-Russell 2004, pg. 93).

A relevant distinction is the differentiation of “urban” and “rural” lifestyles. Thirty-five of Idaho’s 44 counties are considered rural (no city with more than 20,000 residents). In 2003, rural areas accounted for about 88 percent of the State in terms of area and 36 percent of Idaho’s population. The remaining population is located in urban areas, particularly Ada, Canyon, and Kootenai Counties. The social fabric is stronger in rural areas, which have significantly fewer problems of crime, divorce, and teen pregnancy and greater community cohesiveness and spirit (Idaho Department of Commerce, 2005, pg. 3).

Lifestyles in rural areas tend to have a more diverse and direct relationship with natural resources and public lands than most lifestyles in urban areas. There are about 53,487,000 acres of land in Idaho, of which about 20,464,000 acres are NFS lands. The Federal Government manages approximately 63 percent of all Idaho lands. Idahoans do care about management of NFS lands, if for no other reason than it is difficult for them not to be affected by indirect and/or direct impacts. National Forest System lands are noteworthy components of the lifestyles in Idaho communities. For example, in a social assessment for the Clearwater and Nez Perce National Forests, Russell and Adams-Russell (2004) provide a succinct description of lifestyles for the northern part of Idaho, which has relevance for the entire State.

“Lifestyles are customs and patterns of behavior. These are among the most straightforward aspects of community and social life that can be affected by forest management decisions. The characteristics of lifestyle identified by this work as noteworthy are occupation; recreation and outdoor activity; and, the integration of family, place, work, and recreation. To some extent these characteristics exist across the diverse lifestyles in the project area. Most lifestyles are associated with occupations connected to natural resource development such as ranching, farming, logging, mill work, and mining. Others are associated with the place of work such as rural towns and rural cities, where there is a more complex mix of people’s lives. Occupation is a common organizing characteristic of lifestyles, but it is by no means the only relevant attribute. For this discussion, the relevant point is the association of lifestyles with occupation and especially those occupations in the natural resource extraction industries. These lifestyles have emerged from the traditions of frontier settlement and they have now moved into what might be termed a “settled frontier” pattern in which there is a high value placed on the continued use of natural resources for community development and as a source of jobs to support and raise a family.

A second noteworthy lifestyle characteristic is outdoor recreation and activity. These communities place a high value on the recreational amenities offered by the project area's extraordinary landscape. The rivers, lakes, mountains, trails, wildlife, and wilderness areas are important resources because they enable the resident's recreational lifestyles....

Hunting, fishing, hiking, trail riding, rafting, wildlife viewing, berry picking, bird watching, and a variety of other outdoor recreational activities are the past-times of people when they are not working. These activities are sometimes the occasion for family gatherings or otherwise reinforcing social bonds.

The third noteworthy characteristic of lifestyles in these communities is the linkage of family, work, place, and recreation. This point is a logical conclusion from the first two lifestyle characteristics, but it is distinguished here to call attention to the value placed on living in a scenic rural environment offering ample recreation opportunities and the capability to work and support a family.

Family work, place, and recreation are interdependent. The ability to raise a family in close proximity to scenic amenities coupled with ample recreation opportunities motivates a strong interest in any management action or plan affecting any one of these linked elements. These linkages... [Are] vulnerable to change.... (2004, pg. 99–100)."

This description suggests a tight linkage of activity patterns, values, and beliefs, with National Forest System lands. Combined with the ratio of public to private lands and the overall rural character of Idaho communities, this suggests the potential for impact on lifestyles from any management decision about Idaho Roadless Areas.

SOCIAL—ENVIRONMENTAL CONSEQUENCES

Analysis of the comments received in response to the notice of intent was conducted to prepare this EIS. As expected, most of the comments expressed were either "for" or "against" the Idaho Roadless Rule. As discussed earlier in this section, social assessments show strong support for a variety of uses occurring in certain areas. People who hold stronger convictions with respect to particular uses tend to be more vocal regarding their views; therefore, viewpoints that come forward, such as those expressed in public meetings and in letters, are often from people who strongly support an action, policy, or rule and those who strongly don't. This causes a persistent debate between those two groups, and the debate tends to not engage others who are "somewhere in the middle." This debate is driven in large measure by competing sets of values and viewpoints that include fundamental differences in a respondent's: (1) background and way of life, (2) perception of the role of the forest, and (3) attitude about the role of government.

Values, beliefs and lifestyles. A content analysis of the comments on the notice of intent indicates that there are strong proponents and strong opponents of the proposed rule. This analysis also indicates a strong expression of the "utilitarian" and "naturalist"

orientations to nature. These orientations appear to structure beliefs about what is acceptable or what is not in the management of Idaho Roadless Areas.

Supporters of the proposed rule often identify themselves as persons who engage in motorized recreation on public lands or who, because of age or disability, are dependent on motorized access. Those who oppose the proposed rule are not as easily categorized. Although they generally do not identify themselves in terms of background and lifestyles, it is clear that the life experience of many opponents is rooted in a certain kind of relationship to forest lands, a relationship that clearly motivates a certain way of looking at the land.

Thus, if road building were to occur in the Backcountry and the GFRG themes, those people in support of the proposed rule would likely be generally okay with that decision. Those who oppose the rule would not.

Proponents of the proposed rule tend to see NFS lands in terms of the resources they offer for human use. Proponents see the forest as an ecosystem that, under proper management, is capable of providing a host of goods for human well-being, including numerous recreational opportunities. For these people, protection usually consists of managing these lands to ensure access, healthy forests, and sustained economic benefits. Hence, roads are viewed as necessary for some management activities including those that promote forest health, responsible and sustainable resource extraction, and emergency access; and that contribute to meeting increasing recreational demands. The failure to actively manage NFS lands, argue these people, would subject these lands to uncharacteristic insect infestations and catastrophic fire. They tend to see true protection as depending on active and prudent care of these lands. If timber cutting or mineral development were allowed in the Backcountry or in the GFRG themes, these people would likely evaluate the alternatives based on how they enhance economies or resource-dependent lifestyles and would generally be okay with that decision. They would support limited road construction/reconstruction in the Backcountry theme to facilitate timber cutting to improve forest health and reduce hazardous fuels.

On the other hand, those opposing the proposed rule, favoring greater protection of Idaho Roadless Areas, tend to see forest lands as whole ecosystems that are disrupted by human activity. For those respondents, protection usually consists of leaving Idaho Roadless Areas alone to evolve naturally through their own dynamic processes. Persons holding this view place a high priority on environmental protection. They believe Idaho Roadless Areas should be protected for their own intrinsic value as undisturbed (by humans) wildland, for the benefit of wildlife, and for the benefits that these areas offer humans. These places are seen as important sources of clean drinking water and clean air, as a curb on climate changes, and as places of solitude and spiritual renewal. Opponents tend to hold an inclusive view of all living things; however, they are not entirely insensitive to the competing concerns of those whose sources of enjoyment and/or livelihood depend on more active uses of NFS lands. But ultimately, opponents believe that the need for roadless protection outweighs those other concerns, and that

those concerns can be mitigated—for example, through development of alternative materials and energy resources and the designation of less sensitive areas for motorized recreation.

Those opposing the Idaho Roadless Rule tend to do so because they see it as less restrictive than the 2001 Roadless Rule, particularly in the GFRG theme. They are concerned the GFRG theme would not limit road construction/reconstruction, timber cutting, or discretionary mineral activities and that activities permitted on these lands would adversely affect roadless characteristics. They are also concerned about permitting limited road construction/reconstruction to support timber cutting in the Backcountry theme. They would likely evaluate alternatives in terms of the overall effect on intrinsic values or how they provide environmental and ecosystem service benefits. If road construction, timber cutting, motorized travel, or mineral development were allowed to occur or increase, these people generally would be dissatisfied and in opposition.

Collaborative environment. Those people who support the proposed Idaho Roadless Rule generally favor a multiple-use management strategy that allows a wide range of uses. They appear to believe that the proposed rule would allow greater local participation and influence in management decisions regarding NFS lands within Idaho, and that land within Idaho are best managed by Idahoans.

Opponents of the proposed Idaho Roadless Rule generally express a preference for the 2001 Roadless Rule, which provides management prohibitions for Idaho Roadless Areas and sets a national standard for the management of roadless areas within national forests. Opponents express concern that the proposed rule would give local governments and agencies too much authority over national resources and that these local entities too often prefer “development and exploitation over conservation.” They frequently note that NFS lands in Idaho are there for all Americans, not just those who live in Idaho. They assert that Idaho Roadless Areas are best managed at the national level because the lands are paid for by taxpayers throughout the country, not just those living in Idaho. These respondents believe that these Federal lands should not be managed for the economic benefit of residents from a single State.

Proponents seem to perceive the Idaho Roadless Rule as resulting in a balance of State, local, and national interests. The Federal Government retains control of management and decision-making, but State’ rights are strengthened. Similarly, those who live nearby or adjacent to these lands and are likely to be most affected by their management have more direct input through the Governor’s Office; these same persons can provide locally informed input about forest conditions and management. Proponents argue this local input can improve overall management of Idaho Roadless Areas and adapt management needs to specific locations rather than a single approach to Idaho Roadless Area management. Proponents appear to accept the Federal role in roadless area management but argue for consideration of the local communities and economies most affected by national-level decision-making.

The State of Idaho's intent is to contribute to a more positive governance environment and also to a more collaborative environment, with opportunities to collectively come up with solutions. One of the oft-expressed values of collaboration is that people get to participate in "the process," and that such first-hand experience and involvement often provides better "buy-in." Better buy-in, in turn, can foster better support and willingness from people to adhere to the designations. With this in mind, the Governor of Idaho established a roadless Rule Implementation Commission by Executive Order 2006-43 to foster the collaborative development of any projects under the Idaho Roadless Rule.

ECONOMIC CONTEXT—AFFECTED ENVIRONMENT

Terminology. To understand the economic context and consequences described in this document, it is important to clarify the meaning of some of the basic economic terminology used. In particular, the word "value" can mean multiple things depending on the context of its use. Public land valuation has been described with various frameworks by various authors, often leading to confusion and inconsistent application of economic terminology.

Economics is the study of value tradeoffs used to allocate scarce resources to society. In economics, the value of a good or service is measured by what you would be willing to give up to obtain that good or service. An important distinction can first be drawn between use and non-use values. Use is actual interaction with the resource or roadless area, be it consumptive (which can involve renewable and non-renewable resources) or non-consumptive.

There is a spectrum of use levels that constitute the total value of roadless lands to people at various geographic scales. The most obvious values are direct consumptive use values from activities such as timber cutting and mining. Recently, there has been a heightened recognition of the value of many indirect consumptive uses, such as the provision of clean air and clean water by natural systems such as roadless areas. There are also many non-consumptive use activities such as recreation and wildlife and scenery viewing. Less obvious indirect use values also exist, such as reading about and watching television programs based on the wildlife and ecosystems located in Idaho Roadless Areas.

Finally, non-use values are the values that people derive from goods or services (including natural resources and public lands) that are independent of any use they may make of the good or service. These non-use values, which apply to Idaho Roadless Areas and the flora and fauna that live there, include existence, option, and bequest values (described in a later section). Although these values are often small on a personal basis, they extend over large geographic areas and, therefore, can be surprisingly large in total. The techniques used to estimate these values have improved in the past few decades, but relative comparisons are more readily accepted than total value estimates. Total economic value is the technically correct measurement to report existing economic

value. Marginal economic value (the change in economic value associated with an incremental or unit change in production or consumption), on the other hand, is the reporting measure most useful when exploring value tradeoffs stemming from proposed management options.

Calculation of all of these types of values involves some combination of consumer expenditures and consumer surplus. Although expenditures related to timber cutting, mineral extraction and recreation in Idaho Roadless Areas can be impressive; they convey only the price multiplied by quantity information and cannot be used to describe total economic value. Expenditures are the market clearing price multiplied by the equilibrium quantity of any good or service. Expenditures and revenues are components of costs and benefits, respectively. However, these are only the financial components of total costs and benefits. Consumer surplus is the amount of willingness to pay above the price in a market transaction (referred to as the net economic value or benefits minus costs). For example, the value of timber (cut to support hazardous fuel reduction) upwind of communities at risk is not simply the cost to cut and transport logs to a processing facility; the stumpage value also includes additional value not captured by the cost to obtain the resource alone.

In many cases, true markets are not available to help economists' measure land management values. For example, expenditures associated with recreational use in roadless areas may be the amount of money spent to access and participate in an activity. Methods such as the travel cost method have been applied to calculate the money spent to obtain specific recreation experiences. Although, through the use of standard microeconomic theory, both the demand for and value of these experiences can be calculated, obtaining the data to perform this analysis is often prohibitively expensive. In this example, the travel cost method relies on expenditure information, but expenditures should not be confused with total economic value, which is the sum of both consumer expenditures and consumer surplus.

While expenditure data alone do not convey total valuation information, they do illuminate an important idea, analyst perspective (Boardman et al. 1996, pg. 12). Expenditures represent costs to consumers but at the same time they represent revenues to various industries. This distinction helps explain why estimates of changes to jobs and income, called regional economic impacts, that accrue to an economic area as a result of changes to consumer demand cannot be summed with the total economic values of people willing to pay for goods and services from Idaho Roadless Areas. Accidentally summing these figures would result in double counting values that represent both costs and benefits accruing to the two distinct groups, with two different analytic perspectives. That is not to say that economic impacts are not important, which they are, but it explains why they are detailed and ascribed to the five Idaho economic areas and are summarized below.

Economic Non-commodity Values

Non-commodity Values. NFS lands provide a variety of non-commodity benefits to society. Examples include clean air, clean water, recreation opportunities, aesthetics, and biodiversity protection. Recreation values are associated with developed and primitive, motorized and non-motorized uses of the national forests and grasslands. Table 3-56 shows that, according to the National Visitor Use Monitoring (NVUM) surveys conducted between 2000 and 2004 (USDA Forest Service, 2004e), the top seven primary recreation activities on the 10 Idaho national forests were hunting, viewing natural features, downhill skiing, snowmobiling, relaxing, fishing, and developed camping. Other activities that constitute the top three on any given national forest include hiking, walking, and sightseeing. Unfortunately, the data collection protocols used for the NVUM do not currently have sampling techniques capable of sorting out activities specific to Idaho Roadless Areas.

The rough terrain in many roadless areas restricts road-based development, and this has limited human access and by default maintained the wild and scenic characteristics in these areas that support many of the primary activities listed above. These wild and scenic qualities attract adventurous recreational visitors for both consumptive and non-consumptive visitation. While wilderness areas are often noted as hotspots for outfitting, guiding, hunting, and fishing, many of these designated areas start at a ridgeline, making the area only slightly visible from scenic highways. Idaho Roadless Areas, in contrast, often surround these designated areas; they provide an area between actively and passively managed NFS lands and provide opportunities for scenic viewing of lands with a very natural appearance.

Table 3-56. Primary recreation activities on Idaho national forests based on national visitor use monitoring surveys

	All Idaho forests	Boise	Clearwater	Caribou-Targhee	Idaho Panhandle	Nez Perce	Payette	Salmon-Challis	Sawtooth
Number of national forest visits*	7,906,315	1,422,516	726,073	2,449,099	787,975	731,535	619,094	348,741	821,292
Lower bound 80% CI**	7,553,816	1,281,759	606,511	2,188,984	721,627	614,182	583,893	322,865	772,192
Upper bound 80% CI	8,258,814	1,563,273	845,635	2,709,194	854,323	848,888	654,295	374,617	870,392
Percent primary activity participation***									
Developed camping	6.2	11.2	5.8	6.2	2.8	6.5	2.5	3.2	5.8
Primitive camping	2.8	0.2	5.7	3.6	0.9	6.8	2.2	1.4	1.0
Backpacking	0.9	0.4	0.6	1.3	0.5	1.1	0.5	0.6	1.0
Resort use	0.8	2.3	0.0	0.1	1.3	1.9	0.3	0.2	0.6
Picnicking	2.1	1.7	1.2	1.4	2.3	36.0	1.0	0.9	5.1
Viewing natural features	12.0	17.3	9.5	13.0	11.7	12.4	6.8	5.5	8.3
Visiting historic sites	0.5	0.0	0.8	0.0	0.7	0.9	1.2	3.2	0.1
Nature center activities	0.2	0.0	0.1	0.6	0.1	0.0	0.0	0.3	0.1
Nature study	0.1	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.1
Relaxing	11.2	6.0	23.5	2.6	9.0	17.0	9.4	8.0	23.6
Fishing	7.9	8.3	10.2	8.0	6.3	8.1	8.4	16.4	2.1
Hunting	15.4	18.6	7.8	21.2	16.9	14.2	13.2	16.0	2.9
OHV use	4.2	0.1	3.6	8.4	6.0	3.0	2.5	2.6	1.3
Driving for pleasure	3.6	0.7	3.0	4.3	6.9	3.1	5.5	8.1	1.0
Snowmobiling	11.2	10.0	6.4	25.8	1.0	4.7	4.8	0.1	1.1
Motorized water activities	1.0	2.6	0.0	0.4	0.5	2.4	0.9	0.0	0.9
Other motorized activity	0.1	0.0	0.0	0.0	0.7	0.1	0.1	0.2	0.2
Hiking/walking	4.6	1.4	5.3	1.2	11.4	5.0	4.6	12.1	8.9
Horseback riding	0.3	0.0	0.1	0.2	1.0	0.2	0.3	1.0	0.5
Bicycling	1.7	0.3	0.9	2.1	4.6	0.0	1.8	0.0	2.9
Non-motorized Water	1.3	3.3	0.3	0.1	0.9	3.9	1.2	1.4	0.5
Downhill skiing	11.3	20.1	2.3	5.6	2.8	0.1	14.9	0.0	40.4
Cross-country skiing	3.3	6.2	7.7	1.6	0.3	6.4	0.7	0.0	2.1
Other non-motorized	1.4	3.4	0.3	0.4	1.8	1.6	2.1	2.1	0.8
Gathering forest products	1.4	0.3	1.7	0.0	8.8	1.5	4.6	0.7	0.0
Viewing wildlife	3.5		1.2		6.3		1.9	4.2	
Sightseeing	2.8	1.0		3.2		13.4			0.5
No activity reported	5.6	2.7	8.7	0.1	10.5	9.6	18.3	14.4	3.2

* National forest visits are annual figures compiled from a single year of sampling that occurred between 2000 and 2004.

** CI = confidence interval. The sampling design allows estimation of upper and lower estimates around the mean at the 0.8 confidence level; these form the limits of the confidence interval. *** Survey respondents were asked to select just one primary activity.

Amenities and Environmental Functions, Many people who hold ecological values (described in the social section as “naturalists”) view NFS lands as valuable because of the life-supporting environmental functions and services (for example, provision of clear air and clean water) they provide. Recent attempts have been made to quantify some of these ecological values as both amenity values and ecosystem services values. When prices are not charged for Idaho Roadless Areas goods or services, such that expenditures are not required to experience benefits from a roadless area, the total economic value can be described simply by revealing the consumer surplus.

In the past economists focused solely on market or observable portions of valuation. Amenity values from land management resources, on the other hand, do not have traditional markets to convey value information. Webster’s dictionary (1984, pg. 100) defines an amenity as the quality of being pleasant or attractive, a feature that increases attractiveness or value, especially a piece of property and also as something that increases physical or material comfort. These amenities represent a combination of direct and indirect use and have been estimated recently with hedonic⁵⁴ pricing models typically applied to real estate markets. For example, Garrod and Willis (1992) found that distance to woodland and water both raised house prices in Great Britain; Powe et al. (1997) investigated the amenity benefits gained by local residents from access to recreation sites; and Kim and Johnson (2002) added consideration of forest management near houses, noting that visible recent clearcuts reduced house values in Oregon. This is important in the analyses because the various alternatives contain different mixes of land management emphases that make subtle adjustments to the level of amenities supplied to the American public.

These amenities also attract new residents and help retain long-time residents who collectively help support the quality of life and economic vitality. As Idaho transitions to a new century, there is a heightened awareness of the value of the national forests as a source of national ecosystem health, unique habitats and wildlife setting, and magnets for new residents. Several authors have published both theoretical and empirical articles describing how high-amenity physical settings are attracting both tourism and new business to the Western United States (Johnson and Rasker 1995, Beale and Johnson 1998). Public lands and opportunities for adventure and solitude associated with the Idaho Roadless Areas clearly fall within the class of public lands believed by these authors to be directly affecting settlement patterns. Other evidence supports the relationship between high population growth and areas with high recreation use (Johnson and Beale 1994). Ashton and Pickens (1995) found that recreation counties tend to be diversifying more rapidly than non-recreation counties, attributing this to Forest Service multiple-use policy that provides an environment that attracts both tourists and permanent residents to the area. Rasker (1994) and Power (1998, pg. 1-56) have emphasized the role of a high-quality natural environment, scenic beauty, and recreation opportunities in influencing population growth and shaping local economies.

⁵⁴ Models where value is a function of quality.

Air purification, hydrologic system function, maintenance of biodiversity, pollination, waste filtration, carbon sequestration, and other ecosystem services occur daily on all NFS lands including Idaho Roadless Areas. Their value as biological strongholds for terrestrial and aquatic plants and wildlife and as sources of clean water have become increasingly important as habitat loss, nonnative species invasions, and development continues to occur on other NFS lands and other lands nationally. For example, dams, water diversions, stream-channel control projects, and development have affected more than three million miles, or about 98 percent, of the streams in the United States. In every State in this country, the Environmental Protection Agency (US EPA 1998) has found stream and lake sediments polluted by contaminants from surrounding watersheds, and EPA estimates that about 10 percent of the stream and lake sediments in the United States contain contaminate levels sufficiently high to pose risks to fish-consuming wildlife and humans. In the mid-1980s, the U.S. Geological Survey estimated that the number of wetland habitat acres in the contiguous United States has diminished more than 50 percent since European colonization in the early 1600s; the estimated change has been from 221 million acres to 103 million acres (USDI Geological Survey 1996). With the exception of Alaska, few large, relatively undisturbed areas remain in this country outside of designated wilderness areas—which increases the relative value of the waters, wetlands, and other habitats that roadless areas support, and the biological diversity that they foster. While attempts to quantify the total economic value of these ecosystem services are underway across the world, debate persists regarding the magnitude of these values.

Non-use values from Idaho Roadless Areas. Non-use values can be another important consideration in management decisions. Non-use values are often difficult to measure because they are not consumptive values and in most cases they involve no purchase or direct use by those who benefit from them. Through both studies and contributions to conservation organizations, many Americans have demonstrated a willingness to protect wildlife and habitat in the remaining wild areas of North America, even though they will never interact with or use these resources. Krutilla (1967) and Krutilla and Fischer (1975) were responsible for publishing the first discussion of existence values, which is now seen by many as a real part of the willingness to pay for wildlife conservation and open space preservation.

The aquatic and terrestrial wildlife section of this statement describes the current status of many wildlife species whose existence is extremely valuable to many Americans. With many of these species showing general declines in population and adverse reactions to resource development, the significance and value of Idaho Roadless Areas as wildlife refuge areas is clear. In general these roadless areas are relatively free of non-native weeds infestation, habitat fragmentation, and human-caused disturbances that threaten many wildlife species and are harmful to watershed health, making them strong contributors to existence values.

A similar non-use value associated with Idaho Roadless Areas is option value, a term coined in Weisbrod's (1964) first discussion on the topic. Like other options in financial

markets, this value is what people are willing to pay to have the option to use or enjoy use and existence values in the future. This option value is a distinct value, in addition to the existence value mentioned above. The next category of value in the non-use realm is bequest value. Like option value, the willingness to pay for this value derives from future persistence, but in this case it relates to the ability to pass use, existence, and option values to future generations.

Arrow and Fisher (1974) added the term quasi-option value to the non-use value literature, defining it as the willingness to pay to delay an irreversible decision. The reason authors gave for the value of delaying irreversible decisions was to prevent the potential value loss of wildlife-related benefits to humans. These benefits may come in the form of yet undeveloped health-related products such as plant extracts useful for manufacturing or through the future recognition of wildlife social structures useful for business organization. For these reasons, quasi-option value is offered as an additional reason to preserve remaining intact ecosystems.

The non-use values described above can extend well beyond the jurisdictional boundaries circumscribing lands affected by management changes. That is to say, many people across the country obtain value from the land, flora, and fauna in the Idaho Roadless Areas. Simply accounting for the values of people of Idaho would likely neglect a large portion of the non-use values held for these areas. For example, after studying four natural resource public goods in the United States, Loomis (2000) made a general statement about how State and economic value jurisdictions compare for non-use value. He stated that “the results indicate commonly used state and political jurisdictions reflect an average of 13 percent of total benefits in the economic jurisdiction.”

The understanding of the impact of management emphasis changes on non-use values attached to Idaho Roadless Areas is further complicated by the recent recognition that healthy forests systems are dynamic and require disturbance. When most of the non-use values emerged in the literature, the forestry community’s understanding of ecosystem dynamics was far less mature; therefore, the ideas of preserving a static condition were more credible in terms of maintaining ecosystem health and the associated non-use values.

Economic Commodity Values

Commodities (such as wood products, wildlife-related recreation, minerals, range). Commodities produced from NFS lands provide benefits to society in a variety of products. These include timber and non-timber forest products (sawlogs, roundwood, herbs, mushrooms, decorative boughs, and other greens); metals; minerals; crude oil; natural gas; and meat. Many people appreciate both the commodity and non-commodity values of NFS lands. They view humans as trying to make use of natural resources on a sustained yield basis to meet their needs (Grumbine 1999) and see a role of NFS lands as providing goods and services for people.

Moving along the spectrum of non-commodity toward commodity uses, hunting and fishing is an important activity on Idaho National forests. The roadless areas in Idaho provide core habitat supporting abundant game species that provide pursuit and dietary subsistence opportunities; as well as wide-ranging carnivore species that now persist only in limited areas of the Nation. The aquatic and terrestrial wildlife sections of this statement disclose how important many of Idaho's Roadless Areas are in supporting habitat for many species facing rapid population declines.

Several studies have been done in Idaho to estimate the value of some of the popular wildlife-related recreation activities in Idaho. The relative magnitude of expenditures compared to consumer surplus varies based on many factors. For example, several decades ago Sorg and Loomis (1985) estimated that the gross value of a cold-water fishing trip in Idaho was \$80 (which was worth roughly \$125 in 2004 dollars when adjusted for inflation with the gross domestic product (GDP) deflator). This represented roughly \$37 per trip in expenditures (for example, transportation, food, lodging, tackle), plus \$43 per trip in consumer surplus (that is, the amount the typical angler would be willing to pay over and above actual expenditures). Similarly, Sorg and Nelson (1986) also estimated that net willingness to pay in addition to actual expenditures for elk hunting in Idaho ranged from \$52 to \$100 (\$87 to \$167 in 2004 dollars) per trip in 1982 and 1983. These are just two examples of how values accrue to people through social and personal benefits.

Phosphate production from NFS lands has increased since the mid-1980s, both in total quantity and as a proportion of domestic production. Western production will remain important for providing raw material for fertilizer in the western region and for production of elemental phosphorous (Jasinski 1999). Most western NFS production occurs on the Caribou portion of the Caribou-Targhee National Forest, accounting for about 15 percent of domestic production in 2001 (USDA Forest Service 2003). Oil and gas mining, on the other hand, is not occurring in Idaho Roadless Areas; there are no existing oil and gas leases in these areas. Saleable minerals in Idaho Roadless Areas are also negligible across the State.

The full extent of Idaho's geothermal resource has yet to be discovered. The Geothermal Task Force of the Western Governor's Association estimated that Idaho has 855 megawatts (MW) of near-term economic potential reserves (by 2015) and 1,670 MW of long-term potential (by 2025). Apart from this specific site resource estimate, there is no overall estimate of geothermal resource capacity in Idaho Roadless Areas.

There has been some timber cutting in Idaho Roadless Areas between 2001 and 2004, with sales operating in the Idaho Panhandle, Nez Perce, and Sawtooth National Forests, totaling about 950 acres (roughly 1.5 square miles) and producing approximately 8.5 million board feet (MMBF) of timber. As forest plans have been revised in recent years, there has been a substantial decrease in the allowable timber sale quantity and areas designated as suitable for timber cutting. This decrease in timber cutting reflects the increased recognition that roadless areas are important for ecological and human-

centered reasons. It also shifted the environmental effects of U.S. wood fiber consumption to Canada and the southern United States (MacCleery and LeMaster 1999). Overall, NFS lands supply approximately 2 percent of the Nation's wood products. Idaho Roadless Areas provide up to 7 percent of the Forest Service's total timber cutting, or about one-third of 1 percent of the national supply. While this 7 percent is small in comparison to the national program, it can be important to the economies of certain local communities.

Timber Revenue and Costs. The Forest Service spends money to prepare timber sales, do environmental analyses, and conduct other administrative and planning activities associated with timber sales. However, the Forest Service does not necessarily recover its costs from timber sales; therefore, costs may exceed revenues (Table 3-57). Timber sales on national forests are conducted for a number of reasons other than for commodity purposes. Many sales are conducted to meet other resource management objectives that require the manipulation of vegetation, such as improved wildlife habitat, hazardous fuels reduction, and forest health.

Table 3-57 provides information on the costs and revenues associated with timber sales in Idaho's national forests. Revenue data were compiled from Sold and Harvest Reports compiled by the Northern and Intermountain Regions. The average revenue figures below were calculated using a 3-year average (fiscal years 2004–2006) of timber volumes and values (adjusted for inflation to 2006 dollars) for forest products sold on the national forests.⁵⁵

⁵⁵ Recent information on timber management costs were not readily available because of changes in how these items are tracked in the agency's accounting system. Therefore, information obtained from the Forest Service Washington Office on timber management outlays for fiscal years 2000 to 2002 was used to provide estimates of timber management costs for Idaho's national forests, and these costs were adjusted to reflect 2006 costs. Costs used in this analysis included silvicultural exams, sale preparation, harvest administration, and appeals and litigation. The sum of costs for the 3 years (after adjusting to 2006 dollars) was divided by the sum of timber volumes sold during the period 2004 to 2006 to arrive at the average cost figures shown in the table. For most Idaho national forests, average net revenue per million board feet was negative, ranging from a negative \$6/MBF for the Nez Perce National Forest to a negative \$90/MBF for the Salmon-Challis. Average net revenue was positive for two forests, the Idaho Panhandle and the Clearwater.

Table 3-57. Average annual revenues and costs and average net revenue for Idaho National Forest timber sale programs (2004–2006)

Forest	Average revenue per MBF*	Average cost per MBF	Average net revenue per MBF
	----- dollars -----		
Region 1			
Idaho Panhandle	148	141	7
Clearwater	156	120	36
Nez Perce	71	77	-6
Region 4			
Boise	51	101	-50
Payette	117	238	-121
Salmon-Challis	35	125	-90
Sawtooth	48	100	-52
Caribou-Targhee	96	125	-29
* MBF=thousand board feet			

Revenue Sharing. In the mid-1800s, as Federal lands began to be reserved from disposal, local governments became concerned about lost property tax revenues because these Federal lands were not subject to property taxation. Therefore, starting in the early 20th century, the Forest Service was directed to share 25 percent of its revenues with local governments for the benefit of public schools or roads. This was followed over the years by other revenue-sharing legislation (such as the Taylor Grazing Act and Refuge Revenue Sharing Act), but the controversy over revenue-sharing continued because of two main issues. First, revenue sharing was tied to the value and amount of the products sold, both of which fluctuate from year to year, so revenue-sharing was an undependable source of income for local governments. Second, many felt that the amount of the payments was too low compared to the taxes these lands would have generated if privately held.

To alleviate some of these problems, in 1976 Payment in Lieu of Taxes (PILT) legislation was passed to provide an additional, and more stable, source of Federal land payments. However, over the years revenue-sharing payments began to falter, as harvests from Federal timber lands declined and Congress continued to fail to appropriate the funds necessary to fully fund the PILT program. In 2000, the Secure Rural School and Community Self-Determination Act (SRSA) was enacted to provide transitional payments to rural counties affected by declining revenue-sharing payments. Counties receiving 25 percent fund payments were given the option of continuing these payments or switching to the SRSA, which provides payments based on a county's pro-rata share of each State's average high-three payments from the old system (1986–1999) (Gebert et al. 2005, 2004). This legislation ran through fiscal year 2006. However, in May, 2007, Congress extended the act for an additional year and legislation has been proposed to extend it through 2013.

As long as the SRSA remains in effect, these payments would remain the same (except for adjustments for inflation) regardless of alternative. However, should this legislation

lapse, payments would once again be based upon the resources extracted and the prices those resources command on the market. In recent history, such payments have been substantially less than those received under the SRSA. Additionally, if the SRSA is not extended, the payments received by counties would differ depending on alternative because of the various amounts of timber harvested.

State-level economic profile. The Idaho economy is a diverse economy with a blend of industries such as agriculture, manufacturing, services, and government accounting for a large proportion of economic activity. Based on industry output, manufacturing is by far the largest contributor to the Idaho economy with approximately 23 percent of the total output (appendix J, table J-2).

Wood products manufacturing contributes nearly 4 percent of total output and 1.5 to 2.5 percent of employment, value added, and labor income. Mining makes up a very small part of the Idaho economy, accounting for less than 1 percent of output, employment, labor income, and value added. Road construction also accounts for less than 1 percent of Idaho's total output, employment, labor income, and value-added.

BEA Economic Areas

Economic Profile. Tables J3-J7 in appendix J display economic information for each of the Bureau of Economic Analysis (BEA) areas using 2004 Impact Analysis for Planning (IMPLAN) data (Minnesota IMPLAN 2006). The tables provide a snap shot of each BEA economic area from an industry-by-industry perspective measured by employment, labor income (payments to employees and proprietors), industry output (sales), and value added to inputs.

North Idaho

North Idaho is a diverse economy dominated by manufacturing, government, and service-related industries. Based on industry output, manufacturing and government are the largest contributors to the North Idaho economy, each accounting for approximately 15.8 percent of total output. Services, especially health and social services, is also a relatively large contributor from the standpoint of industry output, as is retail trade and construction. Based on employment (18.1 percent of the total), labor income (23.9 percent of the total), and value added (25.1 percent), the government sector contributes the largest relative share to the North Idaho economy. Retail trade, health and social services, manufacturing, and construction also have relatively large shares of employment, labor income, and value added (appendix J, table J-3).

Central Idaho

Based on industry output, the largest sector in the Central Idaho economy is the wood products industry, which contributes approximately 23.1 percent of Central Idaho's total output. However, based on employment (18.5 percent of the total), labor income (23.6 percent of the total), and value added (24.4 percent), the government sector contributes the largest relative share to the Central Idaho economy. Retail trade, health

and social services, and wood products also have relatively large shares of employment, labor income, and value added. Mining and road construction make up a very small part of the Central Idaho economy, each accounting for less than 1 percent of output, employment, labor income, and value added (appendix J, table J-4).

South Central Idaho

The South Central Idaho economy is dominated by agriculture, manufacturing, and services. Based on industry output, manufacturing is the largest contributor to the South Central Idaho economy, with approximately 24.0 percent of the total output. Manufacturing is followed closely, in terms of output, by the agriculture, forestry, hunting and fishing sector, which contributes 21.3 percent of total output. Government is also a relatively large contributor from the standpoint of industry output. Based on employment, labor income, and value-added, government and agriculture contribute the largest relative shares to the South Central Idaho economy. Agriculture comes in first with respect to employment, contributing 15.1 percent of South Central Idaho's total employment. In terms of labor income and value-added, government contributes the largest share, with 15.6 percent of labor income and 17.6 percent of value-added, with agriculture a close second, and manufacturing coming in third.

Wood products manufacturing contributes around 1 percent of total output, labor income, and value added, and less than 1 percent of employment. Mining also makes up a very small part of the South Central Idaho economy, accounting for less than 0.5 percent of output, employment, labor income, and value added. Road construction is slightly higher, contributing about 1 percent of labor income and less than 1 percent of total output, employment, and value-added (appendix J, table J-5).

Boise Idaho

The Boise economy is a diverse economy, with the largest sectors being manufacturing, government, and service-related industries. Based on industry output, manufacturing is the largest contributor to the Boise economy, with approximately 27.2 percent of the total output. Government, construction, and services are also relatively large contributors from the standpoint of industry output. Based on employment (13.1 percent of the total), labor income (18.9 percent of the total), and value added (20.3 percent), the government sector contributes the largest relative share to the Boise economy. Retail trade, health and social services, and construction also have relatively large shares of employment, labor income, and value added.

Wood products manufacturing contributes 1.6 percent of total output in the Boise area. Wood products manufacturing also accounts for about 1 percent of the total Boise economy as measured by employment, labor income, and value-added. Road construction accounts for slightly less than 1 percent of the Boise economy, regardless of the measure used, while mining makes up less than 0.5 percent (appendix J, table J-6).

Southeast Idaho

The Southeast Idaho economy is dominated by manufacturing, government, and service-related industries. Based on industry output, manufacturing is the largest contributor to the Southeast Idaho economy, accounting for approximately 22.1 percent of total output. Services, especially professional scientific and technical services, and government are also relatively large contributors from the standpoint of industry output at about 12 percent each. Based on employment (15.9 percent of the total), labor income (19.6 percent of the total), and value added (21.2 percent), the government sector contributes the largest relative share to the Southeast Idaho economy. Based on employment, retail trade is the next largest contributor to the economy at 11 percent. However, based upon labor income and value-added, professional scientific and technical services surpasses retail trade, accounting for 18.4 percent of labor income and 13.1 percent of value-added. Wood products manufacturing, mining, and road construction each contributes less than 1 percent of total output, employment, labor income, and value added in Southeast Idaho (appendix J, table J-7).

Economic dependency, The National Forest-Dependent Rural Communities Economic Diversification Act of 1990 was passed to provide assistance to rural communities that are located in or near national forests and are economically dependent on forest resources or are likely to be economically disadvantaged by Federal or private sector natural resource or land management practices. The act specifies several eligibility criteria for program assistance for counties, including proximity to national forests (within 100 miles), exclusion from any metropolitan statistical area (as defined by the U.S. Office of Management and Budget), and total labor income (equal to or greater than 15 percent from forestry resources). Distribution of labor income attributable to forest- or wildland-related industries, including primary and secondary labor income effects, was recently estimated to assess changes in eligibility status; distributions are estimated using 2000 data (Gebert and Odell 2007).

A list of natural resource dependent counties was developed for this analysis (table 3-58). Appendix J describes how this list was developed.

Table 3-58. Natural-resource-dependent counties in Idaho economic areas potentially affected by the Idaho Roadless Rule

Bureau of Economic Analysis economic area	Counties where potential opportunities decrease under the Idaho Roadless Rule ^a	
	Wood products ^b	Mining-dependent counties ^c
North	Boundary, Bonner, Kootenai, Benewah, Shoshone, (ID), Ferry (WA), Latah, Pend Oreille (WA) Stevens (WA)	None
Central	Clearwater (ID), Lewis, Nez Perce, Asotin (WA)	None
Southeast	Bear Lake	Caribou, Oneida, Power, and Bannock
South Central	None	None
Boise	None ^d	None

^a Counties not listed would see no change or potential increases in opportunities under the Idaho Roadless Rule.

^b No counties were identified where wood products opportunities would decrease under the Idaho Roadless Rule relative to the 2001 Roadless Rule.

^c Mining-dependent counties (likely to see increases in opportunities under the Idaho Roadless Rule compared to the 2001 Roadless Rule).

^d Fewer than 200 acres, scattered across three counties within the Boise BEA were found where opportunities would decrease.

COMMODITY VALUES—ENVIRONMENTAL CONSEQUENCES

2001 Roadless Rule (No Action)

2001 Roadless Rule prohibits road construction/reconstruction actions, except those associated with seven exceptions, and prohibits timber cutting, sale, or removal, with some exceptions. Table 3-59 displays the foreseeable outputs in Idaho Roadless Areas, by economic area, based on the 2001 Roadless Rule. Some timber cutting would be permitted for ecosystem restoration and hazardous fuel reduction purposes. No road construction is permitted to support timber cutting for these purposes. Timber cutting is projected to occur on about 1,500 acres over the next 15 years, primarily within the North Idaho area.

Road construction/reconstruction associated with existing mineral leases would continue; therefore, phosphate mining on existing leases on the Caribou-Targhee National Forest would continue. About 2,000,000 tons of phosphate deposits are projected to be removed over the foreseeable future (15 years) in the Southeast Idaho economic area.

About 15 miles of road would likely be constructed associated with roaded access to existing leases or areas associated with valid existing rights over the next 15 years. Fifteen miles of road decommissioning are projected to occur under the 2001 Roadless Rule.

Phosphate mining on 13,400 acres in known unleased phosphate areas on the Caribou-Targhee National Forest would not occur under the 2001 Roadless Rule. This mining is not anticipated to occur within the foreseeable future (next 15 years); however, under the 2001 Roadless Rule these areas would never be developed, foregoing any future economic contributions from this activity.

Table 3-59. Annual forest level outputs, 2001 Roadless Rule, summarized by BEA EA¹

Bureau of Economic Analysis economic area	Harvest (MBF)	Phosphate (tons)	Road decommissioning (miles)	Roads (miles)
North	483	0	1	0.85
Central	20	0	0	0.04
Southeast	59	2,000,000	0	0.10
South central	3	0	0	0.01
Boise	2	0	0	0.00
Total	567	2,000,000	1	1.00

MBF=thousand board feet

¹ Forest-specific data may be found in the socioeconomic specialist report in the project record.

Employment and Labor Income. Table 3-60 displays the average annual estimated employment and labor income resulting from the IMPLAN input-output modeling for each economic impact area based on the forest-level outputs projected from the 2001 Roadless Rule (table 3-59).

In North Idaho activities allowed under the 2001 Roadless Rule would annually contribute roughly 12 part- and full-time jobs to the 409,975 existing jobs and approximately \$350,000 in labor income to the more than \$15 billion in existing labor income (appendix J, table J-8). The most notable sectors affected would be agriculture and manufacturing and to a lesser degree healthcare and retail trade (appendix J, table J-8). Overall, contributions to North Idaho's diverse economy would be less than 1 percent.

In Central Idaho, the 2001 Roadless Rule would annually contribute no part- and full-time jobs to the existing 47,000 jobs and approximately \$10,000 in labor income to the existing \$1.6 billion in labor income (appendix J, table J-9). No sectors would be affected. Overall, contributions to the existing economy (the largest sector being the wood products industry) would be less than 1 percent.

In South Central Idaho, the 2001 Roadless Rule would annually contribute no part- and full-time jobs to the existing 107,000 jobs and approximately \$3,000 in labor income to the existing \$3.4 billion in labor income (appendix J, table J-10). No sectors would be affected. Overall, contributions to South Central Idaho's diverse economy would be minimal.

In Boise Idaho, the 2001 Roadless Rule would annually contribute no part- and full-time jobs to the existing 404,000 jobs and approximately \$4,000 in labor income to the \$15

billion in annual labor income (appendix J, table J-11). No sectors would be affected. Overall, contributions to Boise Idaho's diverse economy would be minimal.

In Southeast Idaho, the 2001 Roadless Rule would annually contribute 585 part- and full-time jobs to the existing 185,000 jobs and approximately \$23.6 million in labor income to the existing \$6.5 billion in labor income (appendix J, table J-12). The jobs and labor income are associated with continuation of phosphate mining under existing leases. Mining and agricultural sectors would be affected most in this economic sector, as well as accommodations, food services, retail, transportation, wholesale, and other service sectors. Overall, contributions to the Southeast Idaho's existing economy (the largest sector being the mining industry) would be less than 1 percent.

Table 3-60. Part- and full-time jobs contributed annually and labor income (in thousands of dollars) by Forest Service resource programs under the 2001 Roadless Rule

	North ID		Central ID		South Central ID		Boise		Southeast	
Resource program	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)
Recreation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Wildlife & fish	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Grazing	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Timber	11	297.8	0	10.4	0	0.9	0	4.0	2	30.2
Minerals	0	0.0	0	0.0	0	0.0	0	0.0	582	23,543.1
Roads	1	51.8	0	0.0	0	1.7	0	0.0	1	43.3
Payments to States/counties	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FS expenditures	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total forest mgmt	12	349.6	0	10.4	0	2.6	0	4.0	585	23,616.6

Existing Plans

About 3,452,000 acres within Idaho Roadless Areas have Existing Plan prescriptions that limit activities, especially those prescriptions that recommend the area for wilderness or manage the area for its primitive character. About 4,224,500 acres within Idaho Roadless Areas have prescriptions that permit road construction/reconstruction, timber cutting, and discretionary mineral activity to some degree. Similarly, about 1,262,400 acres are in a management prescription similar to GFRG. Road construction/reconstruction, timber cutting, and discretionary mineral activity would be permitted.

Potential timber harvest under Existing Plans over the next 15 years is projected to occur on about 42,000 acres, with around 46 percent coming from the North Idaho economic area and 38 percent from the Central Idaho economic area (Table 3-61). About 165 miles of road construction/reconstruction are projected to facilitate timber cutting. In addition, 15 miles of road are projected to be constructed/reconstructed to facilitate

mineral access and roaded access in response to valid existing rights. In addition, about 60 miles of road decommissioning are projected to be accomplished over the next 15 years.

The Caribou Forest Plan allows for development of phosphate in existing lease areas (9,100 acres) as well as in those known phosphate areas that are not leased (13,400 acres). About 2,000,000 tons of phosphates are projected to be removed on 1,100 acres over the foreseeable future (15 years) in the Sage Creek and Meade Peak Roadless Areas in the Southeast Idaho economic area (table 3-61) associated with the expansion of the Smoky Canyon Mine.

Phosphate mining on 6,500 acres in known unleased phosphate deposits on the Caribou portion of the Caribou-Targhee National Forest could occur under Existing Plans. This mining is not anticipated to occur within the foreseeable future (next 15 years); however, it is likely to occur sometime in the extended future (50 or more years) and would provide jobs and income if it is developed. Phosphate mining on the 6,900 acres of known unleased phosphate deposits on the Targhee portion of the forest would have to undergo environmental analysis to determine whether or not mineral leasing is permitted.

Existing Plans would allow road construction/reconstruction for geothermal development in some locations in management prescriptions similar to Backcountry and GFRG. It is unknown where and to what degree geothermal resources would be developed; however, since about half of Idaho Roadless Areas have high to moderate potential it is likely some development would eventually occur.

Currently lease applications have been submitted for geothermal exploration, which could affect about 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. If fully developed, roads, transmission lines, and other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources).

Table 3-61. Annual forest level outputs under Existing Plans¹, summarized by BEA EA

Bureau of Economic Analysis economic area	Harvest (MBF)	Phosphate (tons)	Road decommissioning (miles)	Roads (miles)
North	6,290	0	4	8.57
Central	5,140	0	0	0.86
Southeast	2,020	2,000,000	0	2.34
South central	2	0	0	0.05
Boise	6	0	0	0.20
TOTAL	13,458	2,000,000	4	12.02

¹ Forest-specific data may be found in the socioeconomic specialist report in the project record.

Employment and Labor Income. Table 3-62 displays the average annual estimated employment and labor income resulting from the IMPLAN input-output modeling for each economic impact area based on the forest level outputs projected from the Existing Plans (table 3-61).

In North Idaho activities allowed under Existing Plans would annually contribute roughly 149 part- and full-time jobs to the 422,700 existing jobs and approximately \$4.2 million in labor income to the more than \$15 billion in existing labor income (appendix J, table J-8). The most notable sectors affected would be agriculture and manufacturing and to a lesser degree healthcare and retail trade (appendix J, table J-8). Although Existing Plans could contribute more than the other alternatives, the contributions to North Idaho's diverse economy would still be less than 1 percent.

In Central Idaho, the Existing Plans would annually contribute 106 part- and full-time jobs to the existing 47,000 jobs and approximately \$2.8 million in labor income to the existing \$1.6 billion in labor income (appendix J, table J-9). Primarily the agriculture and manufacturing sectors could see additional jobs and labor income and to a lesser extent retail trade, health care, accommodations, and other services. Although Existing Plans could contribute more than the other alternatives, the contributions to Central Idaho's economy would still be less than 1 percent.

In South Central Idaho, Existing Plans would annually contribute no part- and full-time jobs to the existing 107,000 jobs and approximately \$3,000 in labor income to the existing \$3.4 billion in labor income (appendix J, table J-10). No sectors would be affected. Overall, contributions to South Central Idaho's diverse economy would be minimal.

In Boise Idaho, the Existing Plans would annually contribute no part- and full-time jobs to the existing 404,000 jobs and approximately \$12,000 in labor income to the \$15 billion in annual labor income (appendix J, table J-11). No sectors would be affected. Overall, contributions to Boise Idaho's diverse economy would be minimal.

In Southeast Idaho, the Existing Plans would annually contribute 641 part- and full-time jobs to the existing 185,000 jobs and approximately \$24.6 million in labor income to the existing \$6.5 billion in labor income (appendix J, table J-12). The jobs and labor income are associated with continuation of phosphate mining under existing leases, as well as timber harvest projected under Existing Plans. Mining and agricultural sectors would be affected most in this economic sector, as well as accommodations, food services, retail, transportation, wholesale, and other service sectors. Overall, contributions to the Southeast Idaho's existing economy (the largest sector being the mining industry) would be less than 1 percent.

Table 3-62. Part- and full-time jobs contributed annually and labor income (in thousands of dollars) by Forest Service resource programs under Existing Plans

Resource program	North ID		Central ID		South Central ID		Boise		South Eastern ID	
	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)
Recreation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Wildlife & fish	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Grazing	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Timber	141	3,876.0	106	2,725.4	0	0.9	0	4.0	57	1,049.8
Minerals	0	0.0	0	0.0	0	0.0	0	0.0	582	23,543.1
Roads	9	350.5	10	29.4	0	1.7	0	7.7	2	77.4
Payments to States/counties	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FS expenditures	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total forest mgmt	149	4,226.5	106	2,754.8	0	2.6	0	12.0	641	24,670.3

Idaho Roadless Rule (Proposed Action)

About 3,103,500 acres are in the Wild Land Recreation, Primitive, and SAHTS themes, where limited to no road construction/reconstruction, timber harvest, or discretionary mineral activities would occur. About 5,246,100 acres are in Backcountry, which would allow for some road construction/reconstruction, timber cutting and discretionary mineral activities to occur. About 609,500 acres are in the GFRG theme, which does not limit road construction/reconstruction, timber cutting, and discretionary mineral activities. Based on foreseeable projections, over the next 15 years, about 60 miles of road are likely to be constructed or reconstructed. Timber harvest is projected to occur on 12,000 acres with around 48 percent coming from the North Idaho economic area and 46 percent from the Central Idaho economic area (table 3-63). About 45 miles of road decommissioning are also anticipated.

There are 13,400 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 12,100 acres (90 percent) are located within Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop phosphate deposits. About 1,300 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see the Minerals section).

The Idaho Roadless Rule would also permit road construction/reconstruction for geothermal development in the GFRG theme. About 7 percent of Idaho Roadless Areas are in this theme, and about 4 percent could be developed because of slope restrictions (see the Minerals section). It is likely some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and

other facilities would likely be constructed (see appendix I for a description of general development of geothermal resources). Site-specific analysis would occur prior to exploration or development of geothermal energy.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section).

Table 3-63. Annual forest level outputs under the Idaho Roadless Rule¹, summarized by BEA EA

Bureau of Economic Analysis economic area	Harvest (MBF)	Phosphate (tons)	Road decommissioning (miles)	Roads (miles)
North	1742	0	3	1.77
Central	220	0	0	0.00
Southeast	1650	2,000,000	0	2.34
South Central	2	0	0	0.05
Boise	6	0	0	0.20
TOTAL	3,620	2,000,000	3	4.35

¹ Forest-specific data may be found in the socioeconomic specialist report in the project record.

Employment and Labor Income. Table 3-64 displays the average annual estimated employment and labor income resulting from the IMPLAN input-output modeling for each economic impact area based on the forest level outputs projected from the Idaho Roadless Rule (table 3-63).

In North Idaho activities allowed under the Idaho Roadless Rule would annually contribute roughly 41 part- and full-time jobs to the 409,975 existing jobs and approximately \$1.2 million in labor income to the more than \$15 billion in existing labor income (appendix J, table J-8). The most notable sectors affected would be agriculture and manufacturing and to a lesser degree healthcare and retail trade (appendix J, table J-8). Overall, the contributions to North Idaho's diverse economy would be less than 1 percent.

In Central Idaho, the Idaho Roadless Rule would annually contribute 5 part- and full-time jobs to the existing 47,000 jobs and approximately \$116,000 in labor income to the existing \$1.6 billion in labor income (appendix J, table J-9). Primarily the agriculture, manufacturing sectors could see additional jobs and labor income. Overall, the contributions to Central Idaho's economy would be less than 1 percent.

In South Central Idaho, the Idaho Roadless Rule would annually contribute no part- and full-time jobs to the existing 107,000 jobs and approximately \$3,000 in labor income to the existing \$3.4 billion in labor income (appendix J, table J-10). No sectors would be affected. Overall, contributions to South Central Idaho's diverse economy would be minimal.

In Boise Idaho, the Idaho Roadless Rule would annually contribute no part- and full-time jobs to the existing 404,000 jobs and approximately \$12,000 in labor income to the \$15 billion in annual labor income (appendix J, table J-11). No sectors would be affected. Overall, contributions to Boise Idaho's diverse economy would be minimal.

In Southeast Idaho, the Idaho Roadless Rule would annually contribute 631 part- and full-time jobs to the existing 185,000 jobs and approximately \$24.5 million in labor income to the existing \$6.5 billion in labor income (appendix J, table J-12). The jobs and labor income are associated with continuation of phosphate mining under existing leases, as well as timber harvest projected under the Idaho Roadless Rule. Mining and agricultural sectors would be affected most in this economic sector, as well as accommodations, food services, retail, transportation, wholesale, and other service sectors. Overall, contributions to the Southeast Idaho's existing economy (the largest sector being the mining industry) would be less than 1 percent.

Table 3-64. Part- and full-time jobs contributed annually and labor income (in thousands of dollars) by Forest Service resource programs under the Idaho Roadless Rule

Resource program	North ID		Central ID		South Central ID		Boise		South Eastern ID	
	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)	Jobs (#)	Labor income (thousand \$)
Recreation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Wildlife & fish	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Grazing	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Timber	39	1,073.3	5	116.4	0	0.9	0	4.0	47	857.4
Minerals	0	0.0	0	0.0	0	0.0	0	0.0	582	23,543.1
Roads	2	83.8	0	0.0	0	1.7	0	7.6	2	80.4
Payments to States/counties	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FS expenditures	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total forest mgmt	41	1,157.1	5	116.4	0	2.6	0	11.6	631	24,480.9

Summary

The economic impact analysis, which estimates the changes in jobs and labor income for each of the five economic areas of Idaho, reveals that the magnitude of average annual job and labor income impacts associated with all alternatives would be small, not exceeding 1 percent change in any economic area. While expected contributions are small, they would not be distributed equally geographically across the State. Most impacts are projected to occur in Southeast Idaho, associated with phosphate mining, and North Idaho, associated with timber cutting and related road construction and decommissioning.

NON-COMMODITY VALUES—ENVIRONMENTAL CONSEQUENCES

Effects Common to All Alternatives

None of the alternatives would apply management direction to activities occurring under existing leases or where there are valid existing rights. Phosphate mining under existing lease would continue in the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson Roadless Areas. Roadless characteristics—including but not limited to recreation opportunities, scenic quality, habitat for fish and wildlife, and water quality—would continue to be modified on about 9,100 acres within these roadless areas. Phosphate mining would reduce the non-commodity values, amenities, environmental functions, and non-use values in a portion of these seven roadless areas.

2001 Roadless Rule (No Action)

Limited road construction/reconstruction and timber cutting would occur in Idaho Roadless Areas under the 2001 Roadless Rule. Natural processes would dominate. Roadless characteristics would remain intact overall. Idaho Roadless Areas would continue to provide high quality soil, water, and air; sources of public drinking water; diversity of plant and animal communities; habitat for threatened, endangered, proposed, candidate, and sensitive species; reference landscapes; Primitive, Semi-Primitive Non-Motorized, and Semi-Primitive Motorized classes of recreation; natural-appearing landscapes with high scenic quality; and protection of traditional cultural and sacred sites. Although existence, option, and bequest values may decline as wildlife populations decline in many areas of the country, Idaho Roadless Areas would continue to support these values.

Existing Plans

Lands recommended for wilderness and managed for primitive recreation (3.45 million acres) would retain high non-commodity values, amenities, environmental function (such as ability to provide clean air, clean water), and non-use values. About 4.24 million acres are managed similar to the Backcountry theme; some road construction/reconstruction and timber cutting are allowed on these lands. About 1.26 million acres are managed similar to GFRG, and there are generally no prohibitions for road construction/reconstruction and timber cutting on these lands. About 180 miles of road construction/reconstruction may occur over a 15 year period and 42,000 acres of timber harvest which would affect less than 1 percent of the Idaho Roadless Areas.

The Caribou Forest Plan allows for phosphate mining on an additional 6,500 acres of known unleased phosphate deposits within the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek Roadless Areas. An additional 6,900 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest are within the Bald Mountain, Bear Creek, and Poker Creek Roadless

Areas. An environmental analysis would have to be completed to determine how much of the 6,900 acres could actually be leased.

As mines expand into these areas, non-commodity values would be further reduced. Over an extended period of time, non-commodity values and amenities could be reduced on a total of 22,500 acres (acres under existing lease, plus future leasing of known phosphate deposits, assuming all the deposits on the Targhee portion of the forest are leased).

Geothermal resources could be developed in some areas under Existing Plans. However, there is no reliable information for which to base projections; therefore, it is uncertain as to where and to what degree geothermal development would occur. It is assumed that development would begin in areas with existing roads, outside Idaho Roadless Areas, because these are generally cheaper to develop; however, given that about half the high-to-moderate geothermal development overlaps Idaho Roadless Areas, it is likely some development would occur, primarily in the themes similar to Backcountry and GFRG.

Those roadless areas where activities occur could see some changes in non-commodity values, amenities, environmental functions, and non-use values. The wildlife and physical resource section of this statement reveal that Existing Plans represent some risk to soil, water, air, and wildlife resources. Activities associated with Existing Plans including roads, power lines and facilities could reduce the non-commodity values and amenities of the Idaho Roadless Areas affected. In general, because of the existing laws and regulations most environmental functions (such as the ability to provide clean air and clean water) should be retained; however, there could be some reductions in a few localized areas negatively affecting recreation use and non-use values. For example, there could be a change in the type of recreation experiences and scenic quality for visitors and nearby residents as well as impacts on populations of some rare wildlife that would affect people across the country.

The Idaho Roadless Rule (Proposed Action)

Lands in the Wild Land Recreation, Primitive, and SAHTS themes (3.1 million acres) would retain high non-commodity values, amenities, environmental function (such as the ability to provide clean air and clean water), and non-use values. About 5.25 million acres are in the Backcountry theme; some road construction/reconstruction and timber cutting are permitted on these lands. About 609,500 acres are in GFRG, and there are no prohibitions for road construction/reconstruction and timber cutting on these lands. About 60 miles of road construction/reconstruction may occur over a 15-year period, along with 12,000 acres of timber harvest, which would affect less than two-tenths of 1 percent of the Idaho Roadless Areas.

The Idaho Roadless Rule permits phosphate mining on an additional 12,100 acres of unleased phosphate deposits within the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, Mount Jefferson, Bear Creek, and Poker Creek

roadless areas. As mines expand into these areas, non-commodity values and amenities within the affected roadless areas would be reduced. Mining in these areas would not occur in all the roadless areas at one time but would be done over an extensive period of time (50 or more years).

Road construction/reconstruction for geothermal development is also permitted in the 609,500 acres of GFRG. Activities associated with this development—including roads, power lines, and facilities—would reduce the non-commodity values and amenities of the roadless areas affected. However, there is no reliable information for which to base projections; therefore, it is uncertain as to where and to what degree geothermal development would occur. It is assumed development would begin in areas with existing roads, outside Idaho Roadless Areas, because these are generally cheaper to develop; however, it is likely some development would occur over time.

Those roadless areas where activities occur could see some changes in non-commodity values, amenities, environmental functions, and non-use values. The Wildlife and Physical Resources sections of this statement reveal that this alternative does represent some risk to soil, water, air, and wildlife resources. Activities associated with the Idaho Roadless Rule—including roads, power lines, and facilities—could reduce the non-commodity values and amenities of the Idaho Roadless Areas affected. In general, because of existing laws and regulations most environmental functions (such as the ability to provide clean air, clean water) should be retained; however, there could be some reductions in a few localized areas negatively affecting recreation use and non-use values, especially from areas that experience mineral or energy development. For example, there could be a change in the type of recreation experiences and scenic quality for visitors and nearby residents as well as impacts on populations of some rare wildlife, which would affect people across the country.

CUMULATIVE EFFECTS

Overall, NFS lands satisfy approximately 2 percent of the Nation's timber harvest. Idaho Roadless Areas are anticipated to provide up to 7 percent of the Agency's total timber harvest or about one-third of 1 percent of the national demand. While this 7 percent is small in comparison to the national program, it can be critical to the economies of certain local communities. Nationally, any decrease in timber harvest from roadless areas would likely be compensated with offerings from private lands or imports.

Mineral and energy resources from Idaho Roadless Areas can be of substantial value, and lack of road access for exploration and development could have effects on future development of these resources. On a national scale, mineral and energy contributions from roadless areas are small; however, like the timber resource, these contributions can have critical economic impacts on local communities. Other Federal, State, and private lands, or imports, would probably continue to offset any decrease in mineral and energy supply from roadless areas.

Greatest pressures for forest conversion nationally would still be the eastern half of the 48 contiguous States and the west coast (Stein et al. 2005, Stein et al. 2007). This conversion would happen mainly on privately owned lands converted to housing developments.

As population growth and land conversion due to urbanization and development in the United States increase, the value of the ecological and social characteristics of all public lands, of which Idaho Roadless Areas are a part, will continue to increase relative to the economic values of the commodity resources, such as timber and minerals, contained in these areas. In the western, northeastern, and north central States, and in southeast Alaska, rural communities that are highly dependent on timber harvest or mineral extraction from NFS lands view inventoried roadless areas as important economic resources. During the past 18 years, many of these communities experienced the economic effects of a reduction in national forest timber harvesting levels, which have dropped from more than 12 billion board feet (BBF) in 1987 to less than 3 BBF in 2006. Most of this harvest has always come from the portions of NFS lands already containing roads. Further economic loss from a reduced timber program, or additional loss from a reduction in the minerals program, without corresponding new local employment opportunities at the same wage scale, could add to the social and economic problems faced by rural communities unable to diversify. Reductions in resource production may require some residents to relocate to obtain comparable employment.

Idaho Roadless Areas will continue to provide non-commodity values, amenities, and environmental functions. Other programmatic policies and decisions, described in appendix N, further protect or encourage the consideration of these values. Management direction associated with INFISH, PACFISH, forest plan amendments for the Greater Yellowstone area, the Northern Rockies Lynx Management direction, and the Idaho Comprehensive Wildlife Conservation Strategy, all provide sideboards on activities to protect and enhance fish and wildlife habitat. Other programmatic policy actions such as the Roads Policy and Travel Management Policy encourage the consideration of resource needs and effects during the planning process.

The NFP, HFI, HFRA, and the Energy Policy were considered in each resource section. The reasonably foreseeable projections were based on implementing these policies; therefore, they have been considered from a cumulative effects standpoint.

3.16 Other Required Disclosures

SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR §1502.16). The Multiple-Use Sustained Yield Act (Public Law 104-333) defines productivity as part of multiple use-management. Specifically, “multiple use means that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.”

In this context, implementation of any of the alternatives does not require an on-the-ground action to occur; therefore, they do not compel short-term uses.

If implemented the Idaho Roadless Rule prohibitions on road construction and reconstruction and surface occupancy in Idaho Roadless Areas within the Wild Land Recreation, Primitive, and SAHTS themes would maintain long-term productivity by reducing loss caused by road construction to watersheds, soils, critical habitat, and dispersed recreation activities when compared to Existing Plans. The Idaho Roadless Rule would further protect these areas over the 2001 Roadless Rule by limiting surface occupancy associated with mineral leases.

For the Backcountry theme the Idaho Roadless Rule would provide additional protections over Existing Plans by limiting road construction and reconstruction and timber cutting to certain limited situations. Long-term productivity may be affected as the Idaho Roadless Rule would permit roads to be constructed or reconstructed to facilitate timber cutting on more lands than the 2001 Roadless Rule. However, if roads are needed the use of temporary roads are encouraged.

The Idaho Roadless Rule would provide additional protections over Existing Plans on about 0.6 million acres of GFRG, but the protections would be less than the 2001 Roadless Rule on about 0.6 million acres. Long-term productivity may be affected in those areas where phosphate production is permissible and occurs.

UNAVOIDABLE ADVERSE EFFECTS

Selection of Existing Plans (alternative 2) would continue any unavoidable adverse effects of road construction, timber harvesting, and discretionary mineral development in Idaho Roadless Areas. Final implementation of the 2001 Roadless Rule (alternative 1) would also cause some unavoidable adverse effects such as a reduction in the number of acres available for forest health and fuels management treatments (see Vegetation and Forest Health, and Fuel Management sections). Final implementation of the Idaho Roadless Rule (alternative 3) would also cause some unavoidable adverse effects, more

likely in the 0.6 million acres of GFRG and to some degree where road construction or reconstruction is done in the Backcountry theme.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

Implementation of the prohibition on road construction or reconstruction and surface occupancy in the Wild Land Recreation, Primitive, and SAHTS themes under the Idaho Roadless Rule would not cause irreversible or irretrievable commitment of resources because a prohibition of activities would prevent any on-the-ground action. If implemented, these prohibitions would reduce road-caused and surface-occupancy-caused irreversible and irretrievable commitments to watersheds, soils, critical habitat, and dispersed recreation activities in Idaho Roadless Areas as compared to Existing Plans or the 2001 Roadless Rule.

Implementation of the limited permissions in the Backcountry theme under the Idaho Roadless Rule could result in an irretrievable change in roadless characteristics, especially where roads are constructed or phosphate mining occurs, but to a lesser degree than Existing Plans. Implementation of the permissions in GFRG theme (0.6 million acres) under the Idaho Roadless Rule could result in an irretrievable change in roadless characteristics. Under Existing Plans, 1.2 million acres could be affected. Under the 2001 Roadless Rule, irretrievable changes to roadless characteristics are unlikely to occur except under the few allowances of road construction.

OTHER REQUIRED DISCLOSURES

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements” concurrently with and integrated with...other environmental review laws and executive orders.” None of the alternatives are an action that requires consultation under the Fish and Wildlife Coordination Act because they do not require water to be impounded or diverted, or with the National Historic Preservation Act because there would be no ground-disturbing actions. Informal consultation, in accordance with the ESA implementing regulations, is ongoing with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration.

Requirements for USDA rulemaking procedures under regulatory laws and executive orders, such as the Unfunded Mandates Reform Act, Executive Order 12988, and the Civil Justice Reform, were discussed in the preamble for the proposed rule. There are no anticipated effects on any State or county laws because of the permissions for existing rights. Effects on other Federal lands or non-Federal lands are disclosed under each resource section if an effect is anticipated.